SELECTION OF RIGHT TECHNOLOGY AS A FINAL STEP IN RE-REFINING PROCESS

SOLVENT EXTRACTION TECHNOLOGY FOR UPGRADING DISTILLED USED LUBE OIL

OPTIMIZATION OF FLUID MANAGEMENT IN ABOVEGROUND STORAGE TANKS

HAS THE ERA OF HAZARDOUS PARTS WASHING COME TO AN END?

TAKING CONTROL TIPS FOR CONSTANTLY IMPROVING YOUR OPERATIONS

CRACKING AN OLD IDEA APPLIED TO USED AND WASTE OILS

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NORA MEMBERS PROVIDE VALUE TO GENERATORS REGARDLESS OF CRUDE OIL PRICING


This is not the type of news NORA members want to read as it relates to the oil market.

For the second time in less than a year, the overall oil market has dropped quickly. Because the oil recycling industry collects used oil over a long period of time, it is challenging to manage rapid changes in the oil market.

Communicating Value to Generators
When communicating with your generator customers, it is imperative that members promote the value of the environmental service they provide. Oil trading at $40/barrel versus $140/barrel does not change the important and necessary environmental service that NORA members provide to the generator community every day.

The cost to provide responsible collection and recycling services is significant. They include trucks, fuel, staff, testing, tanks, facilities and insurance just to name a few. These costs do not increase or decrease because of how oil is trading.

The value NORA members provide to generators by responsibly recycling their used oil and helping manage their liability should not be underestimated.

Dealing with Falling Oil Prices
As of the writing of this article, the overall oil market is being driven downward primarily by a slowing Chinese economy. Some experts are predicting that the current oversupply could force crude oil prices even lower this fall.

What can NORA members do about this?
First, as mentioned above, continue to aggressively promote the value of the environmental services you provide to your generator customers.

Second, stay informed of the short to mid term market conditions to help you position your company to succeed. The best way to do this is to attend the 2015 NORA Conference & Trade Show in Orlando this November where we will have an industry expert provide the latest market outlook.

Finally, discover the best ways to deal with sharp declines in the oil market. The NORA Conference will have a speaker on how you can use hedging to protect your business and your customers and we will have 400 industry leaders in attendance that you can network with to explore other strategies.
How long has your company been in the industry? How or why was your company established?

Versachi Resources L.L.C. has been in the industry since March 2011. Owner Anthony Cutaia has held positions prior in the environmental, oil recovery, and recycling industry since January 2000.

While on unemployment and having many years experience in the oil recycling industry, I gave it a try and connected one of my customers with one of my outlets for used oil and moved about 12 loads. Decided I better file a dba so I can file my taxes properly. Reached out to more customers and started moving many other products rather than just concentrate on used oil. I always looked up to the brokers that I dealt with on a daily basis and knew I wanted to be at that level at some point in my life and be able to build a network.

What services do you provide? What products do you provide?

Versachi Resources specializes in the marketing and recycling of Crude Oil, Base Oil, Lube Oil, Lube Line Flush, Hydraulic Oil, Transformer Oil, Fuel Oil, Off Spec Fuels, Fuel Blendstock, Cutter-Stocks, Used Oil, Transmix, Light Ends, along with other hydrocarbon and petroleum based products.

Where does your company provide service?

Although Versachi Resources is headquartered in Houston, Texas (Energy Capital of the world), they have serviced customers in other states such as Florida, Mississippi, Illinois, and Louisiana bringing those customers to the Gulf Coast Region to Texas and Louisiana. We are also working on making other contacts around the world so there really are no limits to areas we can cover.

Why are you a member of NORA? How does NORA help you build your business?

I learned about NORA in 2011. I actually attended the NORA Event in Austin, Texas at Omni Hotel. I filled in for National Chemical Supply at the event. I worked with Phillip in getting his product to a couple of my contacts in Houston and was asked to fill in for the Austin show which was 2 hours from me, while also being able to pass out cards for the startup of my business venture. Versachi Resources decided to join NORA in 2014.

Once I attended my first NORA Conference in 2011, I knew I wanted to one day be a part of an organization that helps build business relationships and offers marketing tools for its members. I have had opportunities from NORA members all around the world, so I know NORA’s marketing tools do work fast with the responses I have received only being a NORA member for less than a year.
What are the biggest challenges and opportunities you see facing the industry over the next 5 years?

Being in business for close to 5 years, I have seen the ups and downs of the oil market. I have proven myself to my customers and outlets. One thing I learned from a guest speaker at one of the NORA Conferences and used the advice was that you have to educate your customers. No matter where the oil price is at any given time, educate your customers so they understand the industry. Over the next 5 years, I hope to reach out to many more customers and pick up my client base around the world and keep building relationships and opening new doors along the way. My goal is to keep building my client base and keep giving my customers the support they need for all their product recycling needs.

“Over the next 5 years, I hope to reach out to many more customers and pick up my client base around the world and keep building relationships and opening new doors along the way.”

- Anthony Cutaia, Owner
TEXAS DOT SETS VACUUM TOWER ASPHALT EXTENDER LIMIT AT FIVE PERCENT

The Texas Department of Transportation has approved a statewide provision to Item 300 of the Standard Specifications, regarding a set limit on the use of Vacuum Tower Asphalt Extender (VTAE).

The provision states that a limit has been set on the use of VTAE, or re-refined engine oil bottoms, to no more than 5.0% by weight of the asphalt binder. To view the full provision, visit www.noranews.org.

Earlier this year, NORA developed two specifications related to Vacuum Tower Asphalt Extender (VTAE): One specification for use in pavement construction, and one for use in roofing.

NORA’s specifications are intended to assure the reliability and quality of VTAE products. The proposed specifications are performance based and are not intended to preclude the use of any particular VTAE product.

In 2014, certain states issued bans related to the use of VTAE in asphalt pavement because of concerns of negative impacts from the use of the product. NORA has taken a leadership role in bringing various sectors (NORA members as well as non-members) from the industry together to develop the VTAE specifications. In addition, research is currently underway that will address the concerns of the states that have banned these materials.

GFL TO ACQUIRE LIQUID WASTE COLLECTION OPERATION M&R ENVIRONMENTAL LTD.

GFL Environmental Inc. announced that it has entered into a definitive agreement to acquire 100% of the shares of M&R Environmental Ltd. (M&R). M&R has been involved in liquid waste collections in Canada’s third largest market, Vancouver, British Columbia, for more than 20 years. The transaction closed on July 1, 2015, subject to a number of conditions.

Patrick Dovigi, President and CEO of GFL said: “Bringing together M&R and GFL seemed like a natural fit. Over the past 20 years, M&R has built a strong regional presence in the Vancouver market where GFL has not historically had any operations. GFL plans to build on M&R’s strong customer base and broader product offerings in this market. We are very pleased to welcome M&R’s employees to GFL.”

George Mate, President of M&R said: “We saw this opportunity with GFL as a great way to continue M&R’s long standing commitment to excellent customer service and to our employees.”

INTERNATIONAL TREATMENT CHEMICALS, LLC IS NOW INTERRACHEM, LLC

NORA Member International Treatment Chemicals, LLC has changed the name of their company to InTerraChem, LLC.

You will notice the name change soon on labels, SDS’s, packaging, invoices and marketing/promotional materials.

“Our new name reflects our expanded products and capabilities, while still offering the superior chemistries and customer service on which you have come to rely,” states Curtis Ellis, General Manager of InTerraChem, LLC. The Management and Ownership of the company remains the same.

LUBRICANTS MARKET WORTH $68.54 BILLION BY 2022: GRAND VIEW RESEARCH, INC.

The Global Lubricants Market size is expected to reach USD 68.54 billion by 2022, according to a new study by Grand View Research, Inc. Growth of automotive industry in emerging markets of Asia Pacific and Latin America is expected to drive automotive lubricants demand. The market is characterized by increasing demand for engine oils, transmission fluids and hydraulic fluids in both commercial and consumer automotives. Increasing sales of passenger cars and motorcycles is expected to further strengthen the trend over the forecast period. Increasing industrial output in China, India, Brazil and Russia is expected to drive the demand for industrial lubricants.

EPA PUBLISHES FINAL 2014 EFFLUENT GUIDELINES PLAN

EPA published its Final 2014 Effluent Guidelines Program Plan on August 4, 2015. The Plan announces final decisions EPA is making on the
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HYDRODEC UPDATE ON CANTON RE-REFINERY

Further to the update on the Canton re-refinery on July 10, 2015, the Company reports that cumulative production through the start-up process has to date delivered more than 200,000 gallons (more than 750,000 litres) of SUPERFineTM baseoil with the first commercial sale occurring on August 3, 2015.

Trains 1 and 2 continue to operate at close to design specification producing approximately 9,000 gallons per day.

However, following testing and re-certification of the heat exchangers by the original equipment manufacturer under the direction of the principal contractor, it has been identified that further remedial work will be required to assure Hydrodec of the plant’s capability to operate at full design capacity. This plan of work has been agreed and is being implemented.

As a result, management now expects that production at Canton will not achieve the 19 million litres of base oil in 2015 communicated at the Company’s AGM on June 9, 2015. Nevertheless, the Canton business is still expected to be cash generative by the end of the current year.

A further update on expected production for the year will be provided with the publication of the 2015 interim results on September 23, 2015.

SHARE YOUR NEWS!

If you have news you would like to share with the industry, email info@noranews.org.
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At the 2015 NORA Conference & Trade Show in Orlando, Florida November 11-14 you will learn the latest news as well as the important details that affect your business concerning several government affairs projects and new initiatives. These include:

**VTAE (Vacuum Tower Asphalt Extender)**

Not waiting for actual facts, several state departments of transportation have banned the use of VTAE in highway and road pavement projects. Recently, the Texas DOT took a more moderate approach — limiting the use of VTAE to 5 percent of the final asphalt product. Meanwhile, a number of studies of the performance of VTAE are underway including a major analysis by the University of Illinois. All of the results thus far indicate that VTAE's performance is excellent.

**A.B. 628**

A bill in the California Legislature designed to promote the use of bio-based lubricants was withdrawn by the legislator who introduced it. NORA had raised numerous questions about the bill’s many unintended adverse impacts on the used oil recycling system. The bill can be reintroduced in the next session of the Legislature. If so, NORA will attempt to persuade the author to transform it into legislation that would study the recyclability of used bio-based lubricants.

**NHSM**

Recently, the U.S. Court of Appeals for the District of Columbia Circuit handed EPA a rare complete victory on the Agency’s Non Hazardous Secondary Materials rule. Environmental groups had challenged many components of the rule (including EPA’s decision not to regulate on-spec used oil more stringently than 40 CFR Part 279). Meanwhile, EPA is considering NORA’s three-part petition that would preserve the market for off-spec used oil. NORA has requested a meeting with key EPA officials to discuss the status of NORA’s petition.

**The Toxic Substances Control Act and PCBs**

NORA has provided EPA with a complete presentation of NORA’s proposal to reform TSCA’s regulations governing the remediation standards in PCB/used oil contamination incidents. NORA members that implement the Best Management Practices developed by NORA would get the benefit of more sensible cleanup policies. After several meetings with EPA, the outlook for reform remains very positive but EPA’s deliberative process is quite slow. Meanwhile, legislation to revise and reform TSCA has gained significant bi-partisan support in both Houses of Congress and may land on the President’s desk within a few months.

**DEF (Diesel Exhaust Fluid)**

NORA has launched an important initiative to prevent DEF contamination of used antifreeze. Only a tiny quantity of DEF can render used antifreeze unsuitable for recycling. NORA is teaming up with the American Petroleum Institute (API) to get the word out that DEF must be segregated from both used antifreeze and used oil. A significant education campaign is being developed.

**Update on Safety Data Sheets (SDS)**

Thanks to OSHA’s adoption of the United Nations’ Globally Harmonized System (GHS) of Classification and Labeling of Chemicals, safety data sheets in the U.S. are undergoing their biggest transformation in decades. Safety Data Sheets are an essential component of the GHS and are intended to provide comprehensive information about a substance or mixture for use in workplace chemical management. In the GHS, they serve the same function that the Material Safety Data
Continental Refining Company now accepts transmix. Transmix is produced when refined petroleum products gasoline and diesel are mixed together. Once these refined products are combined the combination no longer meets the approved refined fuel guidelines, this combined product cannot be used as a finished fuel. CRC has developed a processing unit that refines transmix back into gasoline and diesel. CRC is able to recycle fuel and offer wholesalers, jobbers and environmental companies a solution for their mixed fuel problems.

CRC is capable of processing up to 5,500 barrels per day refined products.

Transmix is accepted in the facility Monday thru Friday 8 AM until 3 PM. Each load of transmix brought into the facility is tested for CRC fuel specification guidelines.

More CWT Regulations?

EPA has announced plans to revisit Centralized Waste Treatment regulations. This could affect a wide range of substances managed by CWTs including oily wastewater. NORA is tracking EPA’s every move on the CWT front. In addition, NORA is launching an initiative to minimize unfair competition between CWTs and publicly owned treatment works.

LEARN MORE AT THE ANNUAL CONFERENCE

Learn more on these topics at the Annual NORA Conference & Trade Show in Orlando, Florida November 11-14.

See page 20 for more information.
Bottlenecks. Those are the clogs, the hang-ups or the choke-points which are problems for any business. Companies in the growing liquid recycling industry, which vary tremendously by size, scope and sector, are no different. In order to improve operations all companies must properly deal with their bottlenecks. Identifying the bottleneck itself is a critical first step because it is costing the operation money. Once identified, a communication system is essential for delivering important information that can improve both work flow and profitability.

Bottlenecks, as defined by Eliyahu M. Goldratt in the classic business novel “The Goal”, are resources that have a total capacity equal to or less than the demand placed on them. Based on this idea the flow of operations in any system is dictated by the bottleneck resources in that system. Manage your bottleneck resources well and profitability increases. But failing to manage bottleneck resources is costly. One conclusion from Goldratt’s rationale is that a slowdown of one hour at a bottleneck is really the same as the cost of operating the entire system for one hour.

Monitoring Systems: Critical to Managing Operations

Let’s look at an example involving a lube and oil company which as part of its operations stores used motor oil in tanks until it can be moved to a recycling center. Let’s further suppose that the business is running a special offer for oil changes that resulted in a huge increase in demand from customers. The promotion was successful – for a while. The resulting steady stream of oil changes also quickly filled the recycling tanks to capacity. But no one at the business noticed because the person assigned to visually check the tanks was busy with oil changes. Unfortunately one of the tanks overflowed and spilled used oil onto the ground. The operation ground to a halt until a hazardous waste clean-up could be completed.

The consequences of failing to have an adequate system in place to constantly monitor the volume in the holding tanks were significant for this business. There were unhappy customers and lost revenue from oil changes that did not occur. There were idle resources behind the bottleneck until the recycling tanks were serviced. There was additional expense for lawyers and fines in the aftermath of the spill.

The example illustrates why all businesses need methods to make sure the resources in their systems run in sync with one another. That means getting the best information possible about what is going on at the bottlenecks. In this case liquid level monitoring systems that utilize technology to provide critical information about ongoing operations would have the effect of increasing the system’s overall capacity while avoiding unnecessary expenses and lost revenue.

Using Web-Based Technology to Optimize Liquid Level Monitoring

Web-based liquid level monitoring systems are available that utilize self-contained ultrasonic monitors and 2G/3G cellular communication to relay real-time information for tanks up to 157 inches deep. The system dashboard not only displays current fill levels but generates estimates on when tanks will be full or empty based on historical data. Alerts are generated and prioritized for urgent action, like sudden increases or decreases in liquid levels. These solutions are especially attractive for businesses with multiple locations that seek to optimize their collection and distribution by replacing static “milk run” routing with data-driven route plans. Web-based logistics systems minimize total cost over time. The best systems build accurate forecasts for future planning and dynamically re-calculate the route plan when changes take place.

A process of ongoing improvement requires identifying system constraints and dealing with them as effectively as possible. Until the weakest link is found and fixed, no real improvement can take place within the system. Implement communication tools to manage your bottlenecks, improve your flow of operations to meet demand and raise the profitability of your business.

Joe Laschke can be reached at (636) 825-7231 or jlaschke@husky.com.
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SELECTION OF RIGHT TECHNOLOGY AS A FINAL STEP IN RE-REFINING PROCESS

R e-refineries range in sizes from small-scale skid mounted units to multi-million gallons per year production facilities. No matter the size, they require several stages of processing including a final polishing stage to meet their desired specifications. Most large-scale re-refineries operate hydrotreaters to produce high quality group II and III base oils, but small to medium scale operators use skid mounted filtration/polishing units using activated bauxite or Fuller’s earth (clay). Selecting the right technology for filtration/polishing units along with the right media can have significant impact on the performance and profitability of the re-refineries.

Overview of Technologies
There are several processes available to re-refine used oil into fuel or base oil. Front end processing using high vacuum distillation using a wiped film or falling film evaporator is the most common. Membrane technology and solvent extraction can also be used. Each technology has advantages and disadvantages, but all of these need post treatment to remove the final contaminants and meet the desired specifications. Post treatment or back end processing involves hydrotreating or filtration/polishing step. The quality and volume achieved using hydrotreating is proven, but the cost, permits and operating requirements put this process out of reach for most small to medium re-refineries. Filtration/polishing using activated bauxite or Fuller’s earth (clay) is the preferred option for the small to medium scale re-refineries. These filtration/polishing systems are usually skid mounted, modular in nature and scalable to get desired volumes. It can be operated in series or parallel mode depending on the throughput and quality of product you want to achieve. Some re-refineries even consider to do the multi-pass through this filtration/polishing unit to achieve desired specification of the product.

Rocket Technology
There are various designs or options for modular filtration/polishing units available in the market. This article covers the unique benefits offered by Rocket Technology. Rocket Technology is a patented proprietary technology which is activated bauxite based polishing system. This innovative technology ensures optimum fluid dynamics to give better performance to achieve the desired quality of product. It is possible by designing larger columns for more area for the same footprint compared to conventional units available in the market, yet modular for easy transportation and operation. Rocket Technology adopts in-situ reactivation of activated bauxite for efficient activity recovery in order to get an overall bed life of hundreds of cycles. Rocket technology is supported by a fully automated PLC based control system to monitor and control all important operating parameters during filtration and reactivation cycles to achieve desired specification of the oil.

Operating Considerations
It is important to control throughput or flow rate based on the incoming quality of oil and desired specification of the final product. Alternatively, to achieve final product quality you can run these Rocket Technology units in parallel or series or even consider recirculation or multi-pass. Performance of these units will also depend on how efficiently you are able to reactivate activated bauxite. Important considerations in the reactivation process are sufficient time for each step, controlling vacuum or combustion air flow and temperature control. An efficient in-situ reactivation procedure will not only help you to recover maximum activity for bauxite, but it will also increase recovery of oil, thus minimize the loss. It requires both uniform initial ignition across the top of the bed and uniform flow distribution of combustion air as the combustion front progresses down the full height of the bed. Any flaw in the progression of the combustion front will result in incomplete reactivation of the bauxite which results in reduced overall bed life. Finally, it is important to treat off-gases during reactivation before flaring it to comply with environmental guidelines.

Selection of Media for Rocket Technology
Selection of right media is as important as selection of the technology. There are several types of media available in the market for this polishing step, like Fuller’s earth, activated clay and activated bauxite. Right media should be selected based on the desired chemical properties like alumina and silica content and physical properties like surface area, LOI and particle size. Another important criteria for selection should be reactivation of media for maximum activity recovery to achieve hundreds of filtration cycles typically and reduce overall disposal liability. Activated bauxite meets all above criteria to give you desired quality of product and overall bed life with Rocket Technology. Finally, utmost care should be taken while loading activated bauxite in columns in combination with right size of ceramic bed support and support screens to get desired performance.

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Prior to the Montreal Protocol, solvents dominated cleaning applications; hydrocarbon-based (mineral spirits), halogenated (such as CFC-113 and TCA), and miscellaneous others were the mainstay. The reason for their widespread use was that these solvents were familiar, low-priced, well-matched to soils, and did not require significant process equipment. The down side to all of this was worker exposure to toxic chemicals, cradle to grave liability, and regulatory obligations due to fugitive emissions.

Fast forward to today; aqueous cleaners provide some significant advantages with regard to particle and polar contaminants. Today’s advanced aqueous solutions require minor mechanical and thermal energy inputs to be effective when compared to yesterday’s aggressive solvents. However, these old aggressive solvents pose serious health and environmental risks. Most solvents are also flammable, creating fire and explosion hazards. Alternatively, with the proper industrial parts washing equipment, aqueous cleaners remove oil and grease as easily as solvents, without the negative side issues.

Scott Morin can be reached at (602) 278-7789 or smorin@ketecausa.com.

Let’s take a stroll through history, back to the Stone Age when hazardous solvents ruled day-to-day parts washing operations.
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   b. Treat more types of feedstock (not just ULOs)
   c. Increase the quality and quantity of valuable products
   d. Stabilize and make products meeting specifications without expensive hydrotreating

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**Patent Applications**

Anti-Fouling distillation (PCT/CA2013/050111)  
Fouling resistant cracking (PCT/CA2011/050207, PCT/CA2013/050091, PCT/CA2013/050092)  
Stabilizing/desulphurizing (PCT/CA2011/050117)
Spills over the past few years have sparked significant interest in oil spill prevention across the industry. Not only do facilities with large amounts of oil want to prevent environmental damage, loss of product, and civil lawsuits, but, assuming their operations are based in the United States, they must also comply with the U.S. Environmental Protection Agency’s (EPA) Spill Prevention, Control, and Countermeasure (SPCC) regulations.

For hazardous waste management, the EPA has several regulations that apply to the handling of used oil. In general, all but very small ASTs should have a secondary containment area that contains spills and allows leaks to be more easily detected. That containment area should hold 110 percent of the contents of the largest AST and must be impermeable to the materials being stored. Many states are now requiring that interstitial space, essentially that containment area around the tank, to be monitored and checked regularly to insure that leakage is not occurring. This measurement can be done manually and hand recorded for the required record-keeping, but there are also technology options available to automate both the level measurement and the interstitial space compliance needs.

Three issues particularly important to NORA members with ASTs center on hazardous waste compliance, safety regulations and inventory management practices. Unfortunately, most of these standards and regulations vary and can be difficult to navigate, especially for those members who collect oil and hazardous fluids and have bulk facilities in more than one state.

So let’s start with the hazardous waste compliance challenges. Several catastrophic spills over the past few years have sparked significant interest in oil spill prevention across the industry. Not only do facilities with large amounts of oil want to prevent environmental damage, loss of product, and civil lawsuits, but, assuming their operations are based in the United States, they must also comply with the U.S. Environmental Protection Agency’s (EPA) Spill Prevention, Control, and Countermeasure (SPCC) regulations.

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Used oil collection centers must be registered by a local government to manage used oil. There are several regulations around labeling, leakage and release recovery processes that collection centers are required to follow. Used oil transporters must determine whether the total halogen content of used oil being transported or stored at a transfer facility is above or below 1000 ppm by testing the oil. Records of these analyses must be maintained for a minimum of three years. Anything greater than 1000 ppm is considered hazardous waste and must be treated as such. Additionally, used oil transporters must keep record of each used oil shipment accepted for transport including:

- Name and address of generator
- EPA ID# if applicable
- Quantity
- Date
- Signature of generator

Now let’s turn our attention to the safety compliance requirements. Similarly, safety regulations required by the Occupational Safety and Health Administration (OSHA) have continued to become more stringent and are continuously changing. Recent deaths have sparked debate about how hazardous some of these jobs potentially are. The inhalation of chemicals when opening tanks is becoming more of a concern, even in bulk plant facilities.

The deaths of at least nine workers over the past five years have had haunting similarities. Each worker was doing a job that...
involved climbing on top of a catwalk strung between rows of storage tanks and opening a hatch. There were no known witnesses to any of the men’s deaths. Their bodies were all found lying on top of or near the tanks. Medical examiners generally attributed the workers’ deaths primarily or entirely to natural causes, often heart failure.

But in the past few months, there has been a shift. Though still unsure of the exact cause of the deaths, government agencies and some industry-safety executives are now acknowledging a pattern and are focusing on the possible role played in the deaths by hydrocarbon chemicals, which can lead to quick asphyxiation or heart failure when inhaled in large quantities.

Four workers were engaged in what’s called tank gauging, where they measure the level of oil in tanks. These jobs are often done alone in remote areas and require opening the hatch and standing above it. When that happens, chemicals that have vaporized spurt out in a dense plume that is often invisible. Again, these jobs can be done manually, but with some obvious potential hazards. Alternatively there are technologies available that put electronic tank gauges on these hatches so a person isn’t subjected to that possible plume, nor to the climb of the tank. That tank information then becomes available at any location where an Internet-connection is available.

Another hazard is simply the work that must be done at elevation. An unprotected side or edge which is 6 feet (1.8m) or more above a lower level should be protected from falling by the use of a guardrail system, safety net system, or personal fall arrest system. These hazardous exposures exist in many forms, and can be as seemingly innocuous as a changing a light bulb from a step ladder to something as high-risk as connecting bolts on high steel at 200 feet in the air. One of the serious and oftentimes deadly hazards found in the workplace is falls from elevations.

Last of the three critical issues around ASTs for NORA members, is inventory management practices. Knowing how much of each fluid is on hand is critical to the economics of the business. It is important to have a consistent and accurate method for managing bulk storage of product. Inventory levels should be checked and recorded regularly, which can be done manually or with a variety of different technologies. Whether using flow measurements or level measurements, consistency and accuracy are of utmost importance. Having a system in place that records, stores and reports the information is paramount to gaining efficiencies and improving business decisions. Optimal inventory management assists in reducing shrink, preventing overfills, eliminating run outs, and provides knowledge of the value of inventory on hand.

In all three cases — hazardous waste, safety, and inventory management — record keeping is crucial to meet the compliance requirements. While much of this recording has been done manually in the past, the level of compliance needs are increasing making automation projects show a nice payback. Having a single repository where multiple variables can be kept and reported on drives efficiencies and lowers potential fines. From GPS tracking of workers to insure safety, to automated measurement of interstitial spaces for leakage containment compliance, to tank level monitoring to provide accurate valuation of assets, telemetry technologies and their associated web-based data portals are becoming ever more critical in the management of ASTs.

Mike Murray can be reached at (763) 553-7700 or mmurray@atekcompanies.com.
The 2015 NORA Annual Conference & Trade Show will be held November 11-14, 2015 in Orlando, Florida at the Omni Orlando Resort at Championsgate. Join 400+ industry leaders for networking, business development, and education.

TRADE SHOW - ALMOST SOLD OUT!

The NORA Trade Show will feature over 55+ exhibit spaces with companies displaying the latest products and services available to the liquid recycling industry. See page 30 for the current trade show floor plan. Only a few spots remain, so if you are interested in exhibiting, contact Casey Parker at (703) 753-4277 or casey@noranews.org as soon as possible. Visit www.noranews.org for more information.

SPONSOR THE EVENT

Many sponsorship and advertising opportunities are available for the 2015 NORA Conference & Trade Show. For as little as $150, you can support your industry as well as promote your company. For more information, visit www.noranews.org or see pages 22-23. Contact Casey Parker at casey@noranews.org or (703) 753-4277 to reserve your sponsorship today. NORA thanks all who have already sponsored - your support helps the Conference be a memorable event.

REGISTER NOW

Register online to attend the Conference at www.noranews.org or fill out the form on page 21. Register early to ensure you receive the lowest price and a room in the discounted NORA room block.

HOTEL INFORMATION

NORA has secured a block of hotel rooms at the Omni Orlando Resort at Championsgate for just $199/night. Most attendees will arrive on Wednesday, November 11 and leave on Saturday, November 14. Exhibitors may want to arrive on Tuesday, November 10, to allow time for exhibit set up. To reserve your room, call 1-800-THE-OMNI and mention the NORA Conference, or book online at www.noranews.org > “Events”. For more information on the hotel, visit www.noranews.org.

Book by October 20, but be aware discounted rooms may sell out early.

Please note that the only valid ways of securing a room in the NORA room block are by calling the Omni Hotel or booking through the NORA website.

KEYNOTE SPEAKER: LOU HOLTZ  [ Game Plan For Success ]

Join us as Lou Holtz shares his Game Plan for Success. His message transcends athletics. The motivational miracle worker, who revitalized the Notre Dame football program by leading the legendary Fighting Irish to a national championship, will share a message that centers on people and values and how they contribute to successful relationships and organizations.

One of the most celebrated and accomplished coaches in sports history, Holtz has made a career of inspiring his players and motivating them to be winners. Holtz’s humor and humility endear him to audiences as he helps them learn to assess their strengths, work as a team and embrace the values that can help improve any organization.
Orlando, Florida | November 11-14, 2015
2015 NORA Conference Registration Form
Complete one form for each person. Only one form required to include payment information. 
**EXHIBITORS: Do Not Use This Form - Use Exhibitor Agreement Form**

## Contact Info

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## Registration Choices

Full Registration (you may assign/change names to the registration at any time) includes all conference sessions, conference materials, opening reception (members only), two continental breakfasts, breaks and Friday Night Closing Party Dinner. Payment must be faxed or postmarked by the dates to be eligible for the discounted prices.

### PRICES

<table>
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<th>Regular (by October 3)</th>
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<tr>
<td>NORA Member: Additional person</td>
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<tr>
<td>Non-Member: First person</td>
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### EXTRAS

- [ ] Spouse/Guest: Full Package....$249
- [ ] Spouse/Guest: Friday Only....$209
- [ ] Child Package (Ages 5-14).........$75
- [ ] Golf (Sponsored by Dexsil)........$120
- [ ] Golf Clubs..........................$65
- [ ] Fishing Trip..........................$100

- If you selected golf, please include your average score: ______
- If you selected fishing, please include your shirt size: ______

### Payment

Total Amount Due $__________

- [ ] Check (payable to NORA)
- [ ] American Express
- [ ] Visa
- [ ] MasterCard

Name on Card

Signature

Card Number

Exp. Date

Security Code

Billing Street Number & Zip (if different than above)

Email to send receipt (if different than above)

---

## Submit Your Registration

Credit Card Only: Email casey@noranews.org or fax 703-753-2445
Check or Credit Card: Mail to 7250 Heritage Village Plaza, Suite 201
Gainesville, VA 20155

Questions: Call 703-753-4277 or email casey@noranews.org

---

## Book Your Hotel Room

Omni Orlando Championsgate
1500 Masters Boulevard, Championsgate, FL 33896
NORA Rate $199/night (Book by Oct. 20)

To secure your room, call 800-THE-OMNI and ask for the NORA Conference or reserve your rooms online at www.noranews.org > Events.

---

Cancelations between August 29 - October 2: 50% refund of the registration fee. No refunds after October 2.

---

NORA | LIQUID RECYCLING
Gain exposure for your company at the premier event in the liquid recycling industry. All members, even those not attending the conference, may sponsor to help make this an amazing event. For just a small contribution, you can support your industry and promote your business. All sponsors will be thanked on the NORA website with a link to your company’s website, in Liquid Recycling Magazine which is distributed to 2,000 industry leaders, on oversized signage at the conference and in the conference books which are distributed at the event and posted on the NORA website. Contact casey@noranews.org with any questions.

- **Golf Tournament Naming Rights** (SOLD) $14,500
  - Your logo will be prominently featured on the front cover of the NORA Conference Book and on all name badges. You receive the back cover ad of the conference book. Your company will be thanked at the opening session. In addition, your logo will be screenprinted on the tote bags distributed at registration. Only one available.

- **Fishing Naming Rights** (SOLD) $9,500
  - Your company will be recognized on the box lunches placed in each cart at the start of the tournament. This sponsorship includes two FREE golf tournament registrations and a Golf Hole Sponsor Sign. Only one available.

- **Premier Sponsor** (SOLD) $4,700
  - Your logo will be prominently featured on the front cover of the NORA Conference Book and on all name badges. You receive the back cover ad of the conference book. Your company will be thanked at the opening session. In addition, your logo will be screenprinted on the tote bags distributed at registration. Only one available.

- **Golf Lunch Sponsor** $3,500
  - Your company will be recognized on the box lunches placed in each cart at the start of the tournament. This sponsorship includes two FREE golf tournament registrations and a Golf Hole Sponsor Sign. Only one available.

- **Lanyard Sponsor** (SOLD) $2,800
  - Your company logo will be printed on the lanyard handed to all attendees.

- **Key Card Sponsor** (SOLD) $2,800
  - Your logo will be printed on key cards distributed to NORA guests at hotel check-in.

- **Audio / Visual Sponsor** (SOLD) $2,750
  - Your logo will be prominently displayed when the ‘splash screen’ is displayed in the main meeting room. As an added bonus, this sponsorship includes a free full page color ad in the conference book (a $600 value).

- **Water Bottle Sponsor** (SOLD) $2,200
  - Your logo will be printed on the bottles of water that will be set at every seat at the beginning of the conference on Thursday morning.

- **Notebook Sponsor** (SOLD) $2,100
  - Your logo will be on the notebook placed at each seat at the beginning of the conference.

- **Keynote Speaker Sponsor (Lou Holtz)** $2,000
  - Your company will be thanked prior to the keynote address given by Lou Holtz and you will have the opportunity to address the entire group for one minute. Your logo will appear on a large screen behind the speaker at the beginning of the keynote address. In addition, you will have an exclusive opportunity to privately meet with Lou Holtz before the event.

- **Gold Sponsor** $1,800
  - Your logo will be printed on the front cover of the NORA Conference Book and on large signage at the event. You receive a complimentary full page ad in the event book. Your company will be thanked at the conference opening session. Includes a golf hole sponsorship and company logo printed on the fabric conference bags. - 10 available
## SPONSORSHIP & ADVERTISING OPPORTUNITIES (CONTINUED)

### CONFERENCE BOOK ADVERTISING

The conference book is distributed to attendees, new members who join throughout the year and posted on the NORA website. Attendees refer to this book for contact information for all attendees and exhibitors, event agenda, and exhibitor and speaker information. NORA will design your ad for free.

<table>
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<td>7-1/2&quot; x 10&quot;</td>
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<td>Color Logo by Exhibitor Index (1&quot; high)</td>
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### SUBMIT SPONSORSHIP/ADVERTISING FORM

**CONTACT INFORMATION**

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**PAYMENT OPTIONS**

Total Amount Due $ ____________  
*All payments are in US Dollars, drawn on US Bank.*

- Check (payable to NORA)
- American Express
- Visa
- MasterCard

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Billing Street Number & Zip (if different than above)  
Email to send receipt (if different than above)

**SUBMIT YOUR AGREEMENT**

Credit Card Only: Email casey@noranews.org or fax 703-753-2445

Check or Credit Card:  
Mail to 7250 Heritage Village Plaza, Suite 201 Gainesville, VA 20155

Questions:  
Call 703-753-4277 or email casey@noranews.org
2015 NORA CLOSING PARTY BROUGHT TO YOU BY LUB-LINE SPONSORSHIP FORM

To receive full promotional consideration in print materials, please submit sponsorships by September 25, 2015. After this date, sponsorships are still welcome but will receive different promotional consideration.

SPONSORSHIPS

☐ NAMING RIGHTS (Exclusive) LUB-LINE® $10,000

☐ LEVEL 1 SPONSOR (only 4 available) $5,000
- Large Logo on Conference Book Cover
- Reserved table for 10 in premier location at closing party
- Large Logo on Commemorative Photo Jacket
- Large Logo displayed at Closing Party
- Closing Party Sponsor ribbon on badge
- Recognized at Closing Party dinner
- Color Full Page Ad in Conference Book ($600 Value)
- Color Logo with Company/Exhibitor Index in Conference Book
- Logo on “Thank You” Page in post-Conference Magazine

☐ LEVEL 2 SPONSOR (only 8 available) $2,000
- Logo on Conference Book Cover
- Logo on Commemorative Photo Jacket
- Large Logo displayed at Closing Party
- Closing Party Sponsor ribbon on badge
- Recognized at Closing Party dinner
- Color Half Page Ad in Conference Book ($475 Value)
- Color Logo with Company/Exhibitor Index in Conference Book
- Large Logo on “Thank You” Page in post-Conference Magazine

☐ LEVEL 3 SPONSOR (only 12 available) $1,000
- Name on Conference Book Cover
- Logo on Commemorative Photo Jacket
- Logo displayed at Closing Party
- Closing Party Sponsor ribbon on badge
- Recognized at Closing Party dinner
- Black & White Logo with Company Listing in Conference Book
- Logo on “Thank You” Page in post-Conference Magazine

☐ LEVEL 4 SPONSOR $500
- Small Logo on Commemorative Photo Jacket
- Small Logo displayed at Closing Party
- Closing Party Sponsor ribbon on badge
- Recognized at Closing Party dinner
- Black & White Logo with Company Listing in Conference Book
- Small Logo on “Thank You” Page in post-Conference Magazine

☐ LEVEL 5 SPONSOR $250
- Small Logo on Commemorative Photo Jacket
- Small Logo displayed at Closing Party
- Closing Party Sponsor ribbon on badge
- Recognized at Closing Party dinner
- Black & White Logo with Company Listing in Conference Book
- Small Logo on “Thank You” Page in post-Conference Magazine

CONTACT INFO

Name
Company

PAYMENT OPTIONS

Total Amount Due $ __________
☐ Check (payable to NORA) ☐ American Express ☐ Visa ☐ MasterCard

Name on Card Signature
Card Number Exp. Date Security Code
Billing Street Number & Zip (if different than above) Email to send receipt (if different than above)

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Credit Card Only: Email casey@noranews.org or fax 703-753-2445
Check or Credit Card: Mail to 7250 Heritage Village Plaza, Suite 201 Gainesville, VA 20155
Questions: Call 703-753-4277 or email casey@noranews.org
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www.oileater.com  |  (800) 528-0334
2015 CONFERENCE & TRADE SHOW
TENTATIVE AGENDA

**WEDNESDAY, NOVEMBER 11**

<table>
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<tr>
<td>10:00 AM</td>
<td>Exhibitor Set Up</td>
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<tr>
<td>2:00 PM</td>
<td>Conference Check-In/Registration</td>
</tr>
<tr>
<td>3:15 PM</td>
<td>Board Member Meeting</td>
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<tr>
<td>4:00 PM</td>
<td>New Member/Board Member Reception</td>
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<tr>
<td>4:30 PM</td>
<td>Grand Opening Reception in Trade Show</td>
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**THURSDAY, NOVEMBER 12**

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<tr>
<td>7:00 AM</td>
<td>Continental Breakfast in Trade Show</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>Conference Sessions Open</td>
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<tr>
<td>9:55 AM</td>
<td>Refreshment Break in Trade Show</td>
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<tr>
<td>10:30 AM</td>
<td>Spouse/Guest Brunch</td>
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<tr>
<td>10:20 AM</td>
<td>Conference Sessions</td>
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<tr>
<td>12:15 PM</td>
<td>24th Annual NORA Golf Tournament</td>
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**FRIDAY, NOVEMBER 13**

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<td>8:30 AM</td>
<td>Conference Sessions</td>
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<tr>
<td>10:00 AM</td>
<td>Refreshment Break in Trade Show</td>
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<td>11:30 AM</td>
<td>Tear Down</td>
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<tr>
<td>11:30 AM</td>
<td>Conference Sessions</td>
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<td>5:00 PM</td>
<td>NORA Closing Party</td>
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**SATURDAY, NOVEMBER 14**

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<tr>
<td>6:00 AM</td>
<td>NORA Annual Fishing Expedition</td>
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Air Products: Investing in Hydrotreatment Capability

Air Products’ Hydrotreatment Laboratory will be coming on-stream in the next few months. Air Products continues to focus on the growth of the Waste Oil Refinery and use its knowledge to support re-refiners. Prior to the NORA annual meeting, Air Products issued a press release announcing the construction of a new hydrotreatment laboratory. This will enable companies with small hydrotreaters, such as waste oil recyclers, to perform tests on their material before changing their larger processes. Air Products will be able to assist current hydrogen customers as well as other hydrotreaters with strategies to minimize their cost. The new lab has the benefit of multiple reactors, variable flow and pressure capability, process pressures up to 2000 psig and flexible interconnection. Air Products has gained a vast knowledge of hydrotreatment through 50+ years of supplying gases and technology to purify new and different materials in the crude oil industry. Simulating various hydrotreatment processes in the new lab, can help Air Products:

- Optimize hydrotreatment severity for the specific set of waste oil impurity and process conditions
- Optimize oil to hydrogen ratio
- Understand waste oil impurities and their effect on discoloration and off-spec oil
- Identify differences in performance between various catalysts

Refiners will be able to test things such as feedstock changes or variation, a new catalyst or new operating conditions before applying the change within their process.

Air Products team can help determine how to use industrial gases more effectively and efficiently. They strive to assist their customers by generating and now testing ideas that can allow for safe and profitable growth.

For more information, contact Tim Lebrecht at lebrecht@airproducts.com

Need hydrogen for recycling waste oil?

Air Products cryogenic hydrogen compressor system can give you:

- High pressure, high flow flexibility
- Lower capital expense
- Reduced operating costs through minimized vent losses
- Increased efficiency through load-following

1-610-706-4730
(mention code 5514)
Oil Markets Tanking: Now What?
Just recently, the overall oil market has sunk to new lows not seen since 2009. An industry expert will inform attendees what they believe the market will look like in the next three, six and twelve months so members can best prepare their companies to succeed.

Government Affairs Executive Summary
2015 has been a very active government affairs year. The current and future health of the industry that responsibly recycles used oil and related materials is largely dependent on the regulatory environment. This session will provide a high level view of the major government affairs projects NORA has addressed in 2015 and how they affect your business.

Obamacare: What businesses need to know now.
Mandates. Tax credits. Non-reimbursable plans. The Affordable Care Act is just over five years old and many of the provisions are just starting to hit the business community. Learn what you need to know now to protect your business and provide your employees affordable coverage.

Cracking: An Old Idea Applied to Used Oil
Refineries have moved to include more and more cracking technologies to provide them with more flexibility and profitability especially in the US. This has had an impact on the price of residual and used oil. The same type of technology could be used to complement the distillation and hydrotreating operations for used oil processors. Like refineries, it can improve their flexibility and profitability while at the same time be better for the environment.

VTAE: Update on NORA’s Effort to Protect This Market
Some people call it asphalt flux. Others call it re-refined engine oil bottoms (REOB). NORA calls it Vacuum Tower Asphalt Extender (VTAE). Over the past 18 months, many states have moved to ban or limit the use of this material produced by re-refiners and advanced processors of used oil. Attend this session to learn about NORA’s effort to promote a healthy and expanding market for VTAE products.

Hedging: How to Protect Against Price Volatility
If you are in the used oil business, you know how important it is to understand and manage price volatility. Attendees at the NORA conference will learn about hedging and how it may be a tool you can use to minimize your risk (and your customer’s risk) related to price volatility.

TSCA Reform Update: NORA & EPA Working Together to Solve the PCB Problem
NORA members continue to grapple with the problem of PCBs showing up in used oil and wastewater. Despite the safeguards and procedures that most members have in place to protect against PCB contamination, stuff happens. And when it does, current EPA rules and regulations force us into an unnecessary, wasteful and costly nightmare. Attend this session to learn about the great progress NORA and EPA have made in 2015 to provide relief to NORA members.

Social Media: Opportunity and Threats for NORA Members
YouTube. Twitter. Instagram. Until now, you may have thought these were better left to the teenagers. Today, businesses are beginning to utilize LinkedIn and many of the other services to promote and grow their business. There are also risks about employees sharing company information through these non-traditional channels; especially as younger employees who grew up with social media enter the workforce. This session will bring you up to speed on how to positively utilize social media to grow your business and strategies to minimize the risk to your company.

 Optimization of Above Ground Storage Tanks (AST)
There are over 18 million ASTs in the US alone, many of which are used by the oil recycling industry. Regulatory and compliance standards are beginning to increase in this area. This interactive session will address AST compliance regulations, safety regulations, inventory management practices and available technologies. A case study featuring a NORA member will also be presented to explore real life solutions.

Technology Selection as a Final Step in Re-Refining Process
Re-refineries range in sizes from small-scale skid mounted units to multi-million gallons per year production facilities. No matter the size, they require several stages of processing including a final polishing stage to meet their desired specifications. Most large-scale re-refineries operate hydrotreaters to produce high quality group II and III base oils, but small to medium scale operators use skid mounted filtration/polishing units using activated bauxite or Fuller’s earth (clay). This session will explore “rocket technology” which is an activated bauxite based polishing system.

Safety Issues Involving Oil Shipments By Rail
NORA professionals will offer a comprehensive presentation on safety issues involving oil shipments by rail and inform you of pending legislation and regulations. Such legislation and regulations would affect shipments of used oil by rail.
Heritage-Crystal Clean is one of the fastest-growing used oil and environmental service companies in the USA. We are a long-standing member of NORA, and we actively support the following initiatives:

- Improving the regulatory framework for managing PCB’s in used oil through the NORA TSCA Workgroup
- Working toward establishing an industry standard for Vacuum Tower Asphalt Extender and an official ASTM spec through the NORA VTAE Workgroup
- Representation of the used oil re-refining industry through the NORA Re-refining Council

We continue to invest in our business and expand our geographic service area and scope of services, and we are pleased to work with other NORA members to improve the standards and visibility of our industry.

Check out our website: www.crystal-clean.com or call us at 847-836-5670 for more information.
RESERVE YOUR BOOTH TODAY!

The original Trade Show floor plan has sold out, but based on demand, a limited number of booths have been added.

Contact Casey Parker at casey@noranews.org or call (703) 753-4277 to reserve your booth or for more information.

CURRENT LIST OF EXHIBITORS
(AS OF 8/26/15, SUBJECT TO CHANGE)

Air Products and Chemicals, Inc.
ATEK Access Technologies
BASE Engineering Inc.
Bedford Industries, Inc.
Build-All Corporation
Catalyst Trading Co.
Chemical Engineering Partners
Coco Products
Continental Refining Company
Cuda Aqueous Parts Washers
DesertMicro
Dexsil
Dolphin Centrifuge

Environmental Resource Associates
Erpek Engineering & Consulting
Fenix Process Technologies
Flottweg Separation Technology, Inc.
Fountain Industries LLC
GEA Group
General Combustion Corp.
GIG Karasek – InCon Process Systems
Graymills
Husky Corporation
InTerraChem, LLC
Keteca USA, Inc.
Lamb Fuels

Lubrizol
Mouved
Multitherm LLC
National Chemical Supply
Newport Steel Inc. Oil Filter Processing Equipment
Oilmen’s Truck Tanks
Paratherm Heat Transfer Fluids
PescoBeam
Porcel International, LLC
Quantum Analytics
Radian Chemicals LLC
Senn Dunn Insurance a Marsh & McLennan Agency Company
SmartBin
SPC, A Brady Business
Spencer Strainer Systems
Summit Environmental Technologies
Sweet Gazoil Inc.
SystemOne Technologies
Titan Logic Corp.
Trihydro Corporation
Truck Works LLC
URS/AECOM Corporation
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XL Catlin
Vertex Energy is a leader in the collection, aggregation, recycling and processing of distressed hydrocarbon streams thereby reducing America’s reliance on foreign oil.

Our focus is on creating value through a variety of strategies and technologies that facilitate the re-refining of used oil and off specification commercial chemical products into higher value commodities.

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Member Since 2001
The Closing Party at the 2015 NORA Conference is a great way to conclude the networking at the event in an informal setting.

The Closing Party is included with all conference registrations, exhibitor registration, or spouse/guest/child package. However, the registration fees simply cover the basic food costs. To make this event memorable, your help is needed.

Sponsorships are available. As NORA receives sponsors, the party is upgraded!

All sponsors will receive major promotion. See the form on page 24 for different levels of recognition including advertisements, banners, and a sponsor ribbon on name badges for all attendees from sponsor companies.

Ranging from $250 to $5000, your company has the chance to sponsor this year’s NORA Closing Party. Submit the form on page 24 or visit www.noranews.org.

To receive full promotional consideration, please become a sponsor by September 26th. Companies sponsoring after this date will receive modified sponsor benefits.
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Member Referral Challenge

Refer one member that joins and you receive a $100 American Express gift card
Refer a second member that joins and you receive another gift card
Refer a third member that joins and you receive a 50” TV or iPad
Refer one member who joins AND exhibits at the 2015 Trade Show and you receive a 50” TV or iPad

Email info@noranews.org with an email, phone, name, and company name for the prospective member. Your gift will be shipped to your home. Your name must be listed on the “referred by” line of the member application or exhibitor form.

Offer eligible from May 11, 2015 to October 30, 2015. To be eligible, the company you refer cannot be a current NORA member or a former NORA member who was active within the last year. Only one company may receive credit for a new member or exhibitor. In case of a tie, a coin flip will be used.

The following members have already met the referral challenge. Add your name to this list!

Jim Munnell,
Emerald Environmental

Glen Stenfeldt,
Halron Lubricants Inc

Roy Schumacher,
Schumacher Consulting, LLC

Todd McClead,
Superior Lubricants Co. Inc.
Join your NORA colleagues on the afternoon of Thursday, November 12 for the annual NORA golf tournament at the International Course.

The tournament will start at 12:30 PM, following conference sessions on Thursday, November 12.

The tournament fee is $120, and club rentals are $65. The tournament fee includes a box lunch, hosted beverage cart, and an awards reception following the tournament.

Please note that pairings are done by the event sponsor to promote competitive play between teams. Requests for specific golf pairings are not able to be honored.

Use the tear-out form on page 21 or visit www.noranews.org to register.

BECOME A SPONSOR

The exclusive golf lunch sponsorship is still available! For $3500, your company will be recognized on the box lunches placed in each cart at the start of the tournament. This sponsorship includes two FREE golf tournament registrations and a Golf Hole Sponsor Sign.

Golf hole sponsorships are also available. For $225, your logo will be printed on a sign placed at one of the holes during the golf tournament. Submit the form on page 23 or visit www.noranews.org.
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EMAIL: info@nationalchemicalsupply.com
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14th Annual NORA Fishing Expedition

Register for Fishing

Join your NORA colleagues on Saturday, November 14 for the annual NORA Fishing Expedition.

Fishing will be from 7:00 AM to 9:00 AM at the Disney Contemporary Marina at Disney World.

Buses will depart the Omni Championsgate at 6:15 AM and return at approximately 9:45 AM.

The fee to join the fishing excursion is $100.

Tour will be bass fishing on a 21-foot Tracker pontoon boat that can accommodate up to 5 Guests.

Fishing expedition includes:
- Transportation to/from Omni Championsgate
- An experienced guide
- Rod and reel
- Tackle
- Artificial and/or live bait
- Non-alcoholic beverages (Guests may not bring beverages, food or coolers aboard.)

Use the tear-out form on page 21 or visit www.noranews.org to register. Availability is limited, register early to secure your spot.
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AVP, Environmental
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Oil products can be categorized by the number of carbon atoms in each molecule. For example gasoline has around 8 carbon atoms in each molecule (Octane), jet fuel has 12 carbon atoms, diesel has 16 to 18, lubricating oil has chains between 26 to 40 carbons and heavy oils have more than 40. In general, the smaller the molecule the lower the boiling point. Refineries and re-refineries use multiple distillations, and condensation also called fractionation, to separate the various products in the feedstock.

Crude oil, heavy oil and bitumen have a much greater portion of long molecules than lubricating oils. Distillation alone would result in too much heavy material and not enough of the diesel and gasoline cuts to make a refinery profitable.

To give added value to the feedstock one of the main processes of a refinery is to split the longer molecules into smaller ones using heat as the hammer (e.g. Visbreaking or coking). Add catalyst, you get catalytic cracking; with hydrogen you have hydro cracking.

For example vacuum gasoil average molecules of 34 carbons could be split to make 2 molecules of gasoline and 1 molecule of diesel. The molecules are then fractionated, stabilized and the products can be sold in the market.

A simple refinery is essentially limited to distilling crude oil whereas a complex refinery has many secondary units such as catalytic crackers, hydrocrackers and cokers. The increased flexibility of complex refineries enables them to quickly adapt to constant changes in market conditions for both inputs and outputs. This reduces risk and boosts profits. Nearly all the new refinery capacity built in the world since 2003 is made up of more complex operations.

Presently the complexity of the average U.S. refinery is the highest in the world as they have invested heavily. This is why in the USA between 1993 and 2014 the proportion of residual oil has gone down from 6% to 2.6% a reduction of more than 55%.

For used oils, the advantages of the cracking processes is the possibility of treating not just ULOs (used lubricating oils) but other waste oils such as tank bottoms. The disadvantages were that they produced fuels that had lower margins than base oils.

There were 3 types of cracking processes developed for used oils:

1. The Shurtleff and the SOC1 are relatively simple batch processes cracking the oils in giant kettles. They are adapted to smaller capacity and produce fuels of lower quality.

2. The Propak process from Great Northern Processing is a variation of the Soaker-Visbreaker used in many refineries. It is a continuous process and can produce fuels of better quality and can use distillation towers to separate the products for sale. However, it is prone to fouling and is limited as to the type feedstocks it can process.

3. The SOC2 and the hybrid processes use rotating kilns and are continuous processes. They are the only ones that can take heavier feedstock such as VTAE (Vacuum Tower Asphalt Extender), tank bottoms or other heavy oils because they are resistant to fouling. These cracking processes tend to remove the metals, sulphur and halides from the additives. The reactor products...
are distilled making the fuels more saleable products. These processes use the light portions (gas and naphtha) that come from the cracking as the fuel for the process. The metals and sulfur combine with the active carbon to make a coke-metal-sulfide solid: a non-leachable, hydrophobic and environmentally friendly black powder.

Given the possibility to treat a wider variety of feedstocks and the relatively low capital and operating costs of these new technologies it is possible to optimize the type and size of products made, taking into account markets and transport costs which are important components in used and waste oils processing. The latest cracking technology provides the used oil and waste oil plants the flexibility to treat a wider variety of feedstocks, more choice as to their product slate and better profitability. Like the refineries, the used oil processors can build and/or upgrade their facilities to adapt to local markets and increase their profitability.

Louis Bertrand can be reached at louisbertrand10@gmail.com or (579) 721-1690.
Solvent Extraction Technology has been in use in major refineries for decades, and has been used to remove aromatics and other contaminants from hydrocarbon streams. It has now been adapted from existing crude oil refining technology for the used oil recovery sector. Solvent Extraction can be used as either a stand-alone lube polishing option to upgrade distilled used lube oils (or VGO) to a Group I comparable base lube, or in combination with bauxite based Lube Polishing Systems (LPS) to produce Group II comparable base lube.

The combination of Solvent Extraction technology with LPS technology produces a high quality Group II base lube, without incurring the significantly higher costs and increased safety issues associated with hydrotreating. Solvent Extraction Process has been demonstrated to effectively improve the percent saturates, Sulphur level, color, stability, aromatics content, and odor of typical recovered oil by:

- increasing the saturates by 3 – 5+%,
- decreasing Sulphur levels (though not below 300 ppm as a stand alone system)
- dramatically improving oil color of distilled used lube oil from ASTM 4.0 – 6.0 (medium to dark amber), down to ASTM < 1.0
- significantly enhancing base oil stability (no color deterioration or gum formation in storage)
- effectively reducing PAH (polyaromatic hydrocarbons) content to BDL (below detectable levels)
- markedly reducing odor (from the typical sharp burnt smell to a clean petroleum smell)

Basic Concept and Process Description

Many of the color and odor bodies present in typical distilled used lube oil are actually high boiling aromatics. And fortunately, these aromatics have a strong preferential affinity for the solvent used in the solvent extraction process which is N-Methyl-2-pyrrolidone, or NMP.

So, by contacting the recovered oil with the solvent in the extractor, the vast majority of the color bodies, odor bodies, sulfur compounds, and other aromatics are removed (extracted) from the recovered oil, substantially improving its properties and quality.

Because the solvent and the recovered oil are not miscible with each other they separate almost immediately and almost completely after contacting in the solvent extractor. There is a small percentage of the solvent (~5%) remaining in the raffinate (the oil product from which the aromatics, color bodies and odor bodies have been removed).

The raffinate is then processed using evaporation and stripping to remove virtually all of the remaining solvent traces (typically down to 0.01%) and produce the polished base lube product.

The extract (the solvent containing the removed aromatics, color bodies and odor bodies and some of the other components) is also processed further using evaporation, stripping and distillation to separate the solvent from the aromatics, and other contaminants. The recovered solvent is returned for reuse in the extraction stage of the process; the aromatics are collected separately for sale (as industrial aromatic extract), or for in-plant use (as a fuel), and the wastewater stream (a very small volume) is collected separately for proper disposal or onsite treatment.
The basic process can be broken up into 4 operations that are outlined below. The entire process is designed to run on a continuous basis.

1. Extractor. A Rotating disk Extractor (RDC) is used to continuously wash the oil feed with NMP Solvent. Feed Tanks and receiver tanks for the centrifuges used to pull the last bit of NMP out of the oil raffinate will also be located on this skid. The 2 centrifuges are expected to be mounted adjacent to this skid directly to concrete foundations.

2. Raffinate Solvent Strip. The washed oil is referred to as the raffinate. A 2 step distillation process is used to strip the solvent out of the raffinate (washed oil) before the final product is pumped to the product tank.

3. NMP Recovery. The NMP solvent containing the PCAs is reclaimed in a 2 step distillation process that involves steam stripping prior to the PCA concentrate being pumped to storage.

4. NMP Dehydration. The solvent is stripped of water by simple distillation prior to being pumped back to the clean solvent tank for reuse in the process.

Some of the key advantages of this technology over hydrotreating are:

- It is easily scaled down to relatively small plants – with capacities of from 300 gallons per hour up to 2,000 gallons per hour.
- It is much safer – the solvents are safe and non-flammable, and the vessels all operate at either vacuum or low pressure.
- It is a continuous and completely automated process.

To summarize, Solvent Extraction Technology is a low impact, safe and scalable process to polish distilled used lube oil which is much less expensive than hydrotreating, and also much safer. By itself it will produce a good Group 1 Base lube, and in combination with a bauxite filtration system it will produce an excellent Group 2 Base Lube.

Luke Staengl can be reached at luke@pescobeam.com or (540) 206-2788.

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Your UMO and Asphalt Flux Recycling Specialists.

Ultragen is a leader in Used Motor Oil (UMO) Processing, with 20 years of EPCM experience and over 25 projects completed on two continents. Designs can be tailored for either VGO, MGO, or Base Oil production. We have offices in North America and France. Ultragen can develop process flow diagrams, heat and material balances, plant layouts and detailed cost estimates timely and competitively. The company’s specialty is turnkey projects, including commissioning, start-up and follow-up support.

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NORA continues to raise money for the 2015 PCB/TSCA Reform Project.

Since the beginning of the year, NORA has raised $76,050. In order to reach our goal, NORA needs your help. The association is asking for all members to participate in this effort to fully fund this vital project, and raise the remaining $23,950. Please contact the NORA Office at (703) 753-4277 or info@noranews.org to let us know the amount you would like to pledge.

Thank you to those who have already donated:

- NORA’s Match Program: $30,000
- Heritage - Crystal Clean: $15,000
- Valicor Environmental Services: $5,000
- Future Environmental Inc: $5,000
- Vertex Energy Inc: $5,000
- Universal Lubricants, LLC: $2,500
- Usher Oil Company: $2,500
- Environmental Specialists: $2,500
- Luzon Oil Co., Inc: $1,800
- Atlantic Industrial Services Inc.: $1,500
- Environmental Energy, Inc.: $1,500
- Akron Canton Waste Oil Company: $1,000
- Lube-Tech Liquid Recycling, Inc.: $750
- Arizona Waste Oil Services, Inc: $500
- Valley Environmental Services LLC: $500
- Nuset Industries, Inc.: $500
- Clean Green: $500
OPEN CALL FOR NORA BOARD CANDIDATES

NORA prides itself on being a member driven organization. NORA membership, event attendance and value continue to increase each year. This is entirely because of the efforts of the volunteer leadership of the association. They provide the direction and strategy that allows NORA to provide more value to members. If you are interested, you are strongly encouraged to participate.

This is an open call for candidates for the 2016-2017 NORA Board of Directors. There are a total of five open Board seats this year. Four are for Recycling Members and two are for Associate Members. If you would like to nominate yourself, or someone else, please email info@noranews.org by September 23rd at Noon Eastern. NORA will contact you to review the board position responsibilities and answer your questions. The term for each Board seat is two years (2016-2017). Generally, Board members are requested to be at the three NORA events each year as well as on 2-3 additional phone calls per year.

In addition to Board seats, the association is also seeking individuals to serve on a variety of government affairs committees for 2016. These positions are not elected; the President appoints them. NORA thanks those who have served in the past and encourages members to help lead our industry into the future.

Looking to become more involved in your industry?

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WORKERS’ COMPENSATION: Claims Review

Provided by XL Catlin

This safety bulletin presents workplace accident data and recent claims data from XL Insurance that will help you better focus your workplace safety programs. These findings reveal that increased attention to three key exposure areas: vehicle safety, material and equipment handling, and slip and fall hazards will likely benefit your organization and employees. Additional accident prevention programs and training invested in these areas can have a significant impact on the direct and indirect costs associated with workplace incidents and accidents.

The latest U.S. Bureau of Labor Statistics (BLS) estimates that workplace injuries and illnesses among private industry employers occurred at a rate of 3.9 cases per 100 full-time workers in 2008. Though the total recordable rate continues to decline through the conscientious efforts of employers as well as ever stricter regulatory oversight, the cost of treating and compensating injured employees continues to escalate at an alarming rate. According to the National Council on Compensation Insurance (NCCI), spending for medical benefits under workers’ compensation policies has increased from $10 billion to $26 billion over the past ten years. These numbers do not take into account the additional indirect costs of less productivity, employee replacement, lower morale, and other less quantifiable, but equally detrimental effects on an organization’s bottom line.

According to the most recent annual Workplace Safety Index prepared by the insurance industry, which incorporates BLS data and information from the National Academy of Social Insurance, “Overexertion,” “Falls,” and “Struck by Objects” are the most common types of injuries sustained by workers. A review of recent claims from XL Insurance’s Environmental Unit policyholders reveals similar trends with the majority of injuries over the past twelve months being from “Slips and Falls” or “Strains and Sprains.” Material handling was most often involved in the workers compensation claims involving “Strains and Sprains.” Further, XL workers compensation data reveals that a disproportionally high number of the employees injured were classified as truck drivers, who interestingly enough were most often injured in non-driving situations rather than actually being injured in a vehicular crash.

Vehicle Safety

Working in and around a vehicle can present a dangerous environment for drivers due to the many potential hazards present that can be difficult to identify and control. Activities can require drivers to climb on and off of their vehicle several times a day, unload and handle heavy equipment, come in close proximity to moving parts and machinery, handle hazardous materials, encounter tripping hazards, and avoid many other potential exposures. According to the BLS, 25% of truck drivers who sustained lost-workday injuries were away from work an average of 31 days, with a median of 10 days. Of these injuries, 22% were as a result of slips and falls from working on or around their vehicles. Drivers represented 30% of all XL workers compensation claims, as well as the majority of the highest severity claims reported. Further analysis reveals that injuries while operating or working around vacuum trucks have been found to be a common factor in several of the more serious of these accidents.

Employers tend to focus their fleet safety policies and programs mostly on actual driving hazards as opposed to addressing the equally important workplace safety issues facing drivers every day. Safety training should encompass both driving and non-driving safety; particularly as they relate to:

- Climbing on and off of vehicles (three points of contact)
- Using mechanical lifting devices or getting assistance when moving heavy materials
- Taking proper precautions when working on or around moving machinery and equipment
- Wearing adequate personal protective equipment at all times
Heavy Material and Equipment Handling

Being injured while lifting, placing, carrying, holding, or lowering heavy objects, materials and equipment is consistently a principal cause of work-related injuries. The BLS reports that 4 out of 5 of these types of injuries resulted in lower back strain, and that 3 out of 4 occurred while an employee was lifting an object. Strains and sprains represented over 30% of all XL workers compensation claim injuries reported during the past twelve months. Loading and unloading vehicles, handling chemical drums, and carrying heavy equipment at project sites have most commonly been associated with these claims.

Both management and employees should be involved with analyzing and assessing manual materials handling job tasks that have the potential risk for injury. When a manual materials handling task has been assessed as a risk, the first control option should be to redesign the task so that the risk can be completely eliminated. If this is not possible, the risk should be reduced through the use of mechanical aids and proper lifting training.

Some of the most important factors in assessing a load and handling risks are:

- Weight
- Type of handling required
- Position of the load
- Frequency of lifts
- Distance to be covered
- Time involved
- Forces applied
- Hand-holds
- Terrain to be traveled
- Workplace environment
- Availability of assistance from other personnel or mechanical equipment

The Occupational Safety and Health Administration (OSHA) has developed an interactive e-tool on Safe Material Handling that can be accessed through their website.

continued...
Slip and Falls

Slips, trips, and falls constitute the majority of all general industry accidents. They cause 15% of all accidental deaths, and are second only to motor vehicle accidents as the overall cause of workplace fatalities. Contrary to popular belief, most falls occur at ground level as a result of simple tripping hazards, uneven or slippery walking surfaces, improper footwear, or just plain inattention on the part of the individual. Twenty percent of XL’s claims were due to falls, with some resulting in significant injuries such as fractures, dislocations, and torn ligaments. OSHA has established regulations to help control falls in the workplace. These regulations mandate that the following conditions be maintained:

- Keep floors clean and dry
- Provide warning signs for wet floor areas
- Where wet processes are used, maintain drainage and provide false floors, platforms, mats, or other dry standing places, or provide appropriate waterproof footwear
- Keep all places of employment clean and orderly and in a sanitary condition
- Keep aisles and passageways clear and in good repair, with no obstruction across or in aisles that could create a hazard
- Keep exits free from obstructions
- Provides safety guidelines for ladder usage and care

In workplaces where floors may be oily or wet, or where workers spend considerable time outdoors, prevention of fall accidents should focus on selecting proper footwear. Since there is no footwear with anti-slip properties for every condition, consultation with manufacturers is highly recommended. Employees should also be encouraged through training and other forms of communication to take time and pay attention to where they are going, adjust their stride to the pace that is suitable for the walking surface and the tasks they are performing, and make wide turns when walking along travel routes with obstructed views. There should be adequate lighting for all areas, and consistent housekeeping conducted to keep walkways free of tripping hazards, ice, grease, or other potentially dangerous conditions.

In the U.S. construction industry, falls are the leading cause of worker fatalities. Each year, on average, between 150 and 200 workers are killed and more than 100,000 are injured as a result of falls at construction sites. OSHA recognizes that accidents involving falls from elevations are generally complex events frequently involving a variety of factors. Consequently, the Standard for Fall Protection deals with both the human and equipment-related issues in protecting workers from fall hazards. Under this Standard employers and employees are required to do the following:

- Where protection is required, select fall protection systems appropriate for given situations
- Use proper construction and installation of safety systems
- Supervise employees properly
- Use safe work procedures
- Train workers in the proper selection, use, and maintenance of all protection systems

Protecting employees from being injured on the job is not only a moral obligation, but in these tough market conditions, it also makes good economic sense. In the words of former U.S. Secretary of Labor Robert Reich: “Prevention of workplace injuries and illnesses is a sound investment in our economy and our future, and is vastly preferable to the payment of compensation for the suffering caused by injury and disease. The cost of prevention is significantly lower than the cost to employers, workers, and society as a whole continuing to endure unsafe and unhealthy working conditions.”

For additional information please contact us at 800-327-1414 or check out our website at: http://www.xlenvironmental.com/risk_control/risk_control_main.html.
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“My first car was a white 1966 Thunderbird coupe,” Gary Miller says. “That car got me through high school,” he recalls. Ever since those teenage days in upstate New York Miller has been attracted to 1966 Ford Thunderbirds.

By 1991 Miller’s job had moved him to Virginia. It was there when he first saw a 1966 Thunderbird convertible parked behind a funeral parlor. The car never moved, he observed. Passing weeks turned into months and the car remained stationary. An inquisitive Miller finally left a note with his telephone number under one of the windshield wiper blades.

Two months later he had forgotten about the car when he received a call inquiring if he wanted to buy the car. The caller was moving to Greece and was unloading most of his possessions, including the Thunderbird which then was 25 years old. A meeting was arranged and Miller discovered, “It ran, but not very good and it ate oil.” Nevertheless, Miller bought the car and with his fingers crossed set out for his parents home in New York where he could store the car.

Surprisingly, the trip was uneventful. “It was a rusted hulk,” Miller says. Before disassembling his car Miller constructed a plastic booth where he could keep his car dry. Inside that plastic cocoon Miller sand blasted all the parts of his car and spray painted it and stored it with the weather held at bay.

When new, the car left the factory wearing a coat of red with a black fabric top. When Miller took possession of the car it was maroon with a white top. After stripping off all the paint Miller returned the original candy apple red paint to the body. In 1993 he bought a new black top with a clear plastic rear window.

While both of the bumpers were sent off to be replated with chrome the 390-cubic-inch engine was undergoing surgery. A persistent Miller says overheating problems were finally corrected on the third rebuild. The powerful V-8 now delivers 345 horsepower which is more than sufficient to propel the 4,496-pound Thunderbird.

The Thunderbird was designed as a personal luxury car and was loaded with extras. The bucket seats, console and instrument panel emulated aircraft cockpit styling of the day. The front seat passenger is comforted in the reclining bucket seat. Entering the driver’s seat is made accommodating complements of the Swing-Away two-spoke steering wheel. With the automatic transmission placed in park the steering column can be shifted about ten inches inboard to the right providing an abundance of room for the driver.

An AM/FM radio is mounted in the dashboard near the controls for the air conditioner and the convertible top. The spacious interior is covered in red vinyl over the red carpeting on the floor.

The steering, brakes, windows, antenna and door locks are all power assisted. Small lights atop each front fender flash to alert the driver that the turn signals are activated. The turn signals in the taillights flash in a sequential fashion.

With the healthy four-barrel carburetor gulping fuel Miller in 1994 declared the restoration of his Thunderbird complete — as complete as a restoration is ever complete.

When he purchased the sleek car the odometer had recorded 72,000 miles. Since then the 15-inch wheels have turned so many times the odometer now reads 97,000 miles. Those were comfortable miles riding on the 113.2-inch wheelbase.

Only 5,049 Thunderbirds like this one were built and even with a hefty base price of $4,879 in 1966 the Thunderbirds were a spectacularly good deal.
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<th>PHONE</th>
</tr>
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<tbody>
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<td>Scott Lucas</td>
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</tr>
<tr>
<td>Coles Environmental</td>
<td>Ben McNeill</td>
<td>Bakersfield, California</td>
<td>(661) 322-8258</td>
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<tr>
<td>East Side Oil Company</td>
<td>Patti Carlson</td>
<td>Saint Cloud, Minnesota</td>
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<tr>
<td>Great American Treatment and Recycling</td>
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<td>Schererville, Indiana</td>
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</tr>
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<td>Wheeling, Illinois</td>
<td>(800) 323-6329</td>
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<td>Jeffersonville, Indiana</td>
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</tr>
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<td>Truck Works LLC</td>
<td>Mike Maddux</td>
<td>Phoenix, Arizona</td>
<td>(602) 233-3713</td>
</tr>
</tbody>
</table>

## INDUSTRY CALENDAR

**2015 NORA CONFERENCE & TRADE SHOW**  
November 11-14, 2015  
Orlando, Florida  
[www.noranews.org > Events](http://www.noranews.org > Events)

**2016 NAPA ANNUAL MEETING**  
February 7-10, 2016  
La Quinta, California  
[www.asphalt paving.org](http://www.asphalt paving.org)

**2016 NORA EH&S FORUM**  
February 17, 2016  
San Antonio, Texas  
[www.noranews.org > Events](http://www.noranews.org > Events)

**2016 NORA WINTER MEETING**  
February 17-19, 2016  
San Antonio, Texas  
[www.noranews.org > Events](http://www.noranews.org > Events)

**2016 NORA MID-YEAR MEETING**  
June 2016  
New England  
[www.noranews.org > Events](http://www.noranews.org > Events)

**2016 NORA CONFERENCE & TRADE SHOW**  
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How is your company connected to the industry?
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What products / services does your company provide?
We manufacture parts washers and degreasing equipment for solvent and aqueous based cleaning applications. We provide them to NORA members that offer a parts washer service to their customers. One way Build-All Corporation differentiates itself is by offering a variety of standard colors. We will also match a customer's color upon request (reference units 3-7).

What value do you find in NORA membership to expand your business opportunities?
NORA hosts a trade show at their annual meeting that allows us to interface with members that may need parts washers.

They also provide a Membership Directory identifying which members offer parts washer services so we can make sure they are aware of Build-All's capabilities.
How do your products assist NORA members to diversify their revenue streams?

Most NORA members actively try to expand their relationships with their customers with a broader offering of products. The addition of parts washers into their offering helps them to accomplish this.

While the typical sink on a drum parts washer is commonly offered; Build-All also manufactures “made-to-order specials” when a standard product will not work. Providing their industrial customers with this capability could further expand the product offering of NORA members (reference units 1 and 2).

“NORA hosts a trade show at their annual meeting that allows us to interface with members that may need parts washers.”

- Dick Berg
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<td>Manufacturer of parts washers and degreasing equipment.</td>
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<td><a href="mailto:rmangiapane@gmail.com">rmangiapane@gmail.com</a> (734) 341-7245</td>
<td>Environmental Strategist</td>
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<tbody>
<tr>
<td>Fountain Industries LLC</td>
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<td><a href="mailto:mhoward@gencor.com">mhoward@gencor.com</a>, (407) 290-6000</td>
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<td>Centrifuges-disc type and decanters for the purification of used oil and/or wastewater. Biodiesel-separator and decanters used in Biodiesel Process.</td>
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<td>Geophia, LLC</td>
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<td>Absorption materials.</td>
</tr>
<tr>
<td>Graymills</td>
<td><a href="mailto:tkucklick@graymills.com">tkucklick@graymills.com</a>, (773) 477-4100</td>
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