

The International Magazine of Rendering

June 2016

# Render

## Chemical Hazards

Their source and control



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**Renderers Tackle  
Complex Issues**

**FSMA Sanitary  
Transportation Rule Finalized**

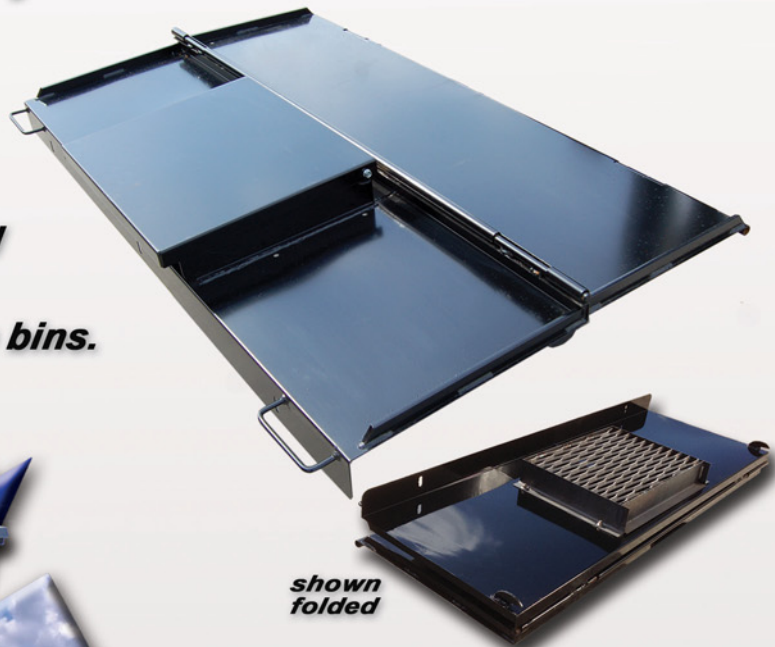
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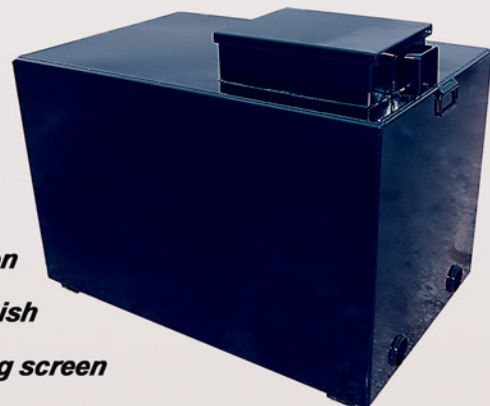
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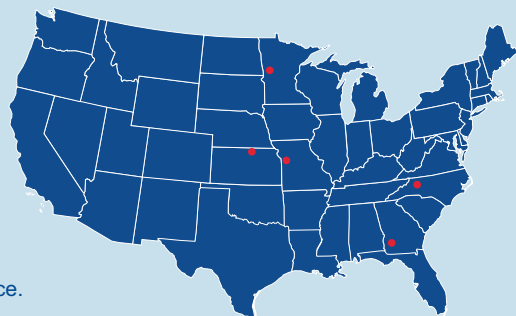
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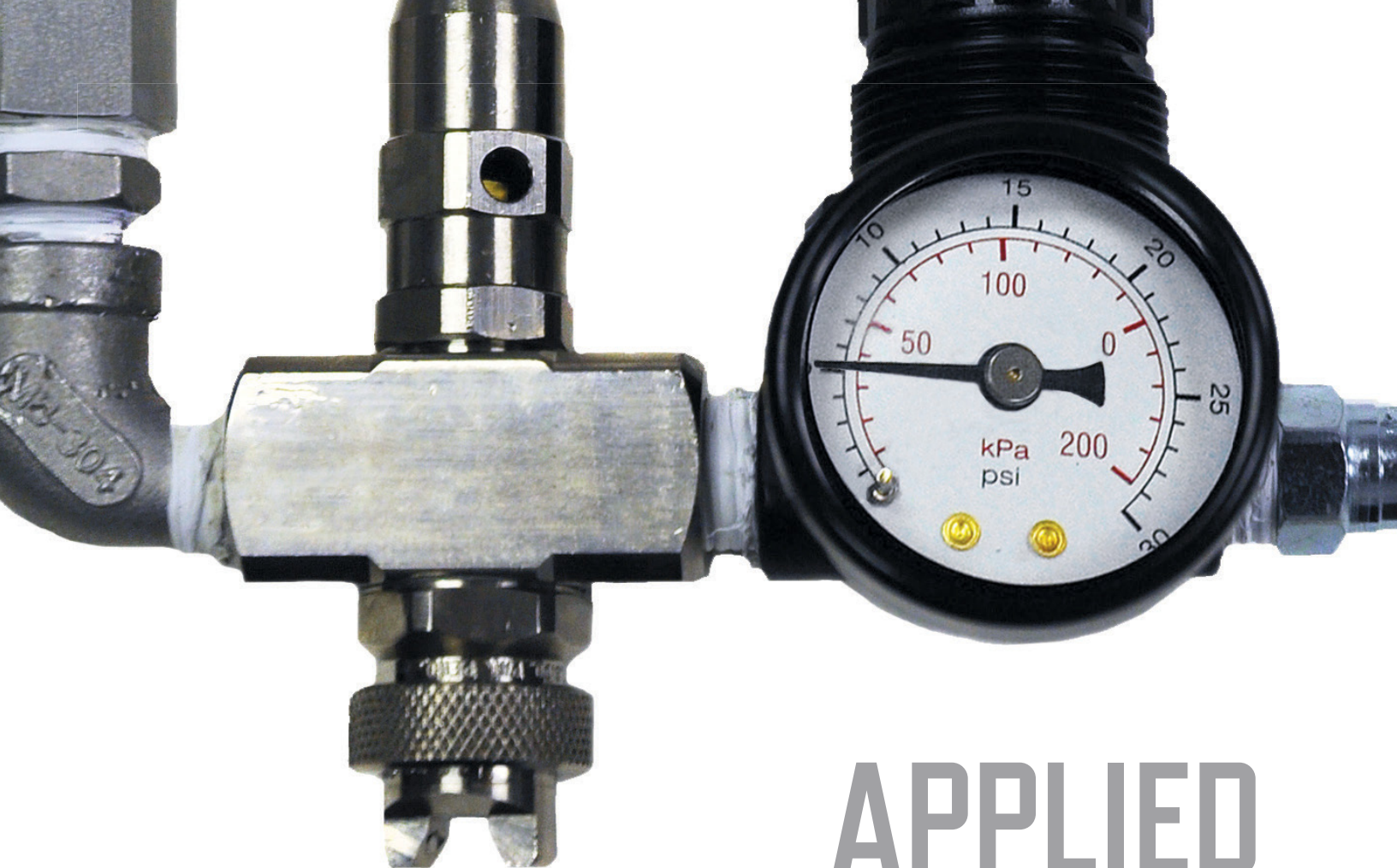
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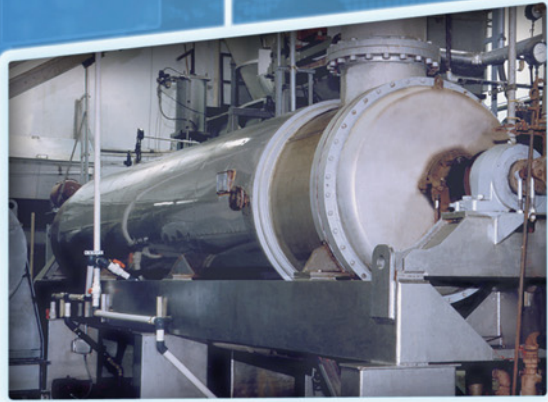


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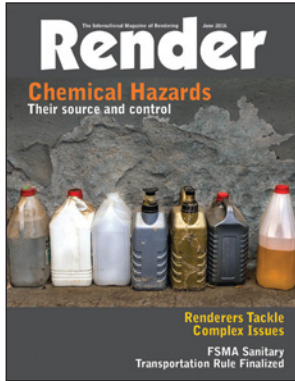
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## On the Cover

Reviewing the steps renderers can take to control chemical contamination. **p. 10**

## Features

- 10** **Chemical Hazards**  
*Their source and control.*
- 12** **Renderers Tackle**  
*Complex issues.*
- 14** **FSMA**  
*Sanitary transportation rule finalized.*
- 16** **APPI Membership**  
*Continuous improvement.*
- 20** **Online Training Offered**  
*For code of practice and FSMA.*

## Departments

- 6** **View from Washington**  
*And then there were two.*
- 8** **Newsline**  
*California renderers remain challenged.*
- 22** **From the Association**  
*Taking action on a new strategic plan.*
- 24** **Biofuels Bulletin**  
*US biodiesel and renewable diesel imports up.*
- 26** **International Report**  
*A growing population: chance or challenge?*
- 28** **FPRF Research Wrap-up**  
*Funding research and a plan for a new approach.*
- 32** **ACREC Solutions**  
*Moving new technologies to market.*
- 36** **Tech Topics**  
*Environmental regulatory beat goes on.*
- 39** **Mark Your Calendar**
- 40** **Labor and the Law**  
*A house of cards: securing storage racks.*
- 42** **People, Places, and...**
- 44** **Classifieds**

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*Render* (ISSN 0090-8932) is published bimonthly under the auspices of the National Renderers Association by Sierra Publishing, 1621 Glen Dr., Placerville, CA 95667 as a public service to the North American and global rendering industry. It is intended to provide a vehicle for exchange of ideas and information pertaining to the rendering and the associated industries. *Render* is distributed free of charge to qualified individuals upon written request. Publisher reserves the right to determine qualification. Periodical postage paid for at Camino, CA, and additional mailing offices.

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Printed in USA

POSTMASTER: Send address changes to *Render*, P.O. Box 1319, Camino, CA 95709.

# Renderitorial

Government regulations. Need we say more?

While new regulations are often put in place to protect or enhance people's lives, products, or industries, inevitably a few companies are not going to benefit. In some cases, a few may even stop doing business altogether.

Such is the case in the state of California. New federal food safety regulations coming into force this fall have caused two renderers in the Golden State to stop collecting carcasses, meat, fat, and bone material. They are small family-owned companies that have been servicing their communities for generations. Yet the cost of upgrading equipment and hiring more personnel to ensure compliance was not cost-effective so business models were adjusted. At one company, the grease collection routes were sold and it stopped collecting fat and bone material, bringing closure for one family and creating opportunity for another (see Newline on page 8). At the other, the cessation of raw material collection is producing a crisis in an area that is logistically difficult to service. The decision of one may eventually provide opportunity for another but at this time it has created concern and a slew of uncertainty within several industries and state government.

Yet renderers have been here before...companies close or sell off and service routes get adjusted. Change. Yes, it is difficult but oh so inevitable. Consolidation in the rendering industry will only continue as the way of doing business gets more complicated and costly. How rendering operations were run in the past ("old school") will need to transform to meet new government, client, and consumer demand ("new school"). There are the players who have always done things one way now engaging with individuals who bring with them new technologies and more advanced ideas on meeting these new demands. In 10 years, the leaders of today's industry will change over to new faces who will carry on at ensuring rendering remains the viable and sustainable industry it has been for more than a century.

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## And Then There Were Two

Just about a year ago, most political experts offered pretty much the same forecast for the 2016 United States (US) presidential election: former Secretary of State/Senator/First Lady Hillary Clinton would sail to the Democrat nomination, if not the White House, while real estate mogul/reality television producer and star Donald Trump's presidential aspirations would be mostly entertaining, burn brightly for a minute or two, and be a distant memory by June 2016. Both forecasts were dead wrong.

The current US political season is, for the majority of observers, the most counterintuitive, anti-establishment race for the White House in recent memory.

As of this writing, Trump will carry the GOP banner to Clinton's Democrat flag in the race for the most electoral votes on November 8. Both candidates put the talking heads and media inside the Beltway into a frenzy because neither fits the mold of a conventional presidential candidate. Trump defies the definition because he is Trump, a businessman with high name recognition but not a professional politician who spent his primary runs ignoring the Republican National Committee (RNC). Clinton, a party stalwart, pushes the envelope because she is running as a loyal President Barack Obama acolyte dedicated to the hallmark "hope and change" of his eight years, not as the first independent woman to head a major party ticket for president of the United States.

More than in previous presidential elections, this race is less about the better candidate to lead the country and more about blocking the other party's nominee. Just less than 50 percent of voters who say they support either Clinton or Trump acknowledge their priority is blocking the other party from winning, according to a Reuters/Ipsos poll in early May.

Both candidates carry near-historical high unfavorable ratings – Trump at 65 percent, Clinton at 55 percent – across the country no matter the particular demographic, and neither is seen as particularly likeable, compassionate, or trustworthy. In any other election cycle, such public opinion numbers would be troubling, if not fatal, but not in 2016.

Clinton is hailed as an experienced politician and leader with strong foreign policy credentials. Trump is the classic outsider, a savvy businessman who will shake up Washington, DC, and bring a new era of government. Both Clinton and Trump are wild cards on policy and positions with just six months to define – many contend the goal is to redefine – and then sell themselves to the American public.

Throughout the primary/caucus season, Clinton, the single "establishment" politico in the race, struggled against self-described democratic socialist Senator Bernie Sanders (I-VT). Sanders, who stunned experts by generating support among millennials – including 18 to 35-year-old women previously assumed to be a lock for Clinton – has forced Clinton to run farther to the left on issues than perhaps she is comfortable or pundits expect. While it appears she will accumulate enough delegates by the July 25 opening gavel of the Democrats'

Philadelphia, Pennsylvania, convention, Sanders has vowed to fight to the bitter end.

Trump is the definition of the political survivor, surprising even himself in reaching presumptive nominee status after Texas Senator Ted Cruz suspended his presidential bid. Trump identified early that the open road to votes lay with exposing within the middle and lower-middle classes – particularly among men – the raw nerves of the disenfranchised. He provided a very loud voice for their frustrations, suspicions, and distrust of the establishment's political system and those who inhabit it.

Some pundits contend Trump's mastery of bombast, overstatement, contradiction, and diatribe is intentional and highly effective. Others contend he is simply stumbling to the nomination, tripping over one misstatement or insult after the other, successful if for no other reason than he is "The Donald," with the inevitable media feeding frenzy.

The baggage Clinton brings with her is well known: President Bill Clinton's continuing popularity with the Democrat base, up to now untouched by his infidelities real or imagined; her move to New York to run for the Senate; her loss to then-Senator Obama for the 2008 Democrat presidential nomination; and her embracing of President Obama's foreign policy agenda – against which she ran vigorously in 2008 – when he named her secretary of state.

Looking at Clinton's record as secretary, there is continuing ugliness surrounding her handling of the 2012 terrorist attack on the US consulate at Benghazi, Libya, that left three people dead, including the US ambassador. There is also the seemingly unending Federal Bureau of Investigation (FBI) probe into her use of a personal e-mail server, questions of whether she compromised classified and top secret government information, and, ultimately, if the FBI will bring charges or indict her.

Trump is now the only option for the "anyone but Hillary" faction of voters, those who see a Clinton presidency as four more years of Obama policy and priorities. However, he defies the lesson the GOP thought it learned after the defeat of its presidential nominee Governor Mitt Romney in 2012, namely that no candidate wins the presidency relying on the angry white man vote. However, the sleeping tiger of blue collar men that Trump has awakened is not enough to win the White House. He must pull independents – both moderate and conservative – as well as 18 to 35 year olds, a solid percentage of Hispanics and African Americans, and at least some portion of the female vote across all of those demographics. Polls show more than 65 percent of women interviewed "don't like" Trump.

Clinton entered the primary juggernaut assuming she would inherit the Obama voter base, which is women, African Americans, Hispanics, and a good chunk of the 18 to 25 demographic. Sanders, while failing to attract most black and Latino voters, upset the Clinton machine by attracting younger



women and millennials. Perhaps most vexing to Clinton is how her support from African American and Hispanic voters eroded over time, going from more than 60 percent to less than 45 percent over the last several months, while recent polling shows 58 percent of all women surveyed say they “don’t like her.” Her challenge is to convince Sanders supporters she is the Trump alternative and to get Sanders to publicly endorse her at the Democratic National Convention and urge his base to vote Clinton in November.

Both candidates are challenged now to unify their parties after some of the bitterest primary campaigning on record. Trump’s “row” is the much harder one to hoe. While Clinton needs to make Sanders happy – a rollicking Trump defeat fits that bill along with prominence in a Clinton administration – Trump goes into the July 18 Republican National Convention in Cleveland, Ohio, with his party’s leadership less than thrilled with his candidacy. More than a few GOP stalwarts are wondering if the man is conservative enough while several prominent GOPers publicly oppose his candidacy. One sure sign of Republican ambivalence is the startling number of Republican members of Congress who have no intention of attending their party’s national convention lest they be tied to Trump.

Having pulled off enough primary wins to effectively lock up his party’s nomination on the first ballot – avoiding an open convention – Trump’s threats of lawsuits and other actions have disappeared. However, what is very real and very damaging is that Romney as well as former White House aspirant Senator Lindsay Graham of South Carolina, President George H.W. Bush, President George W. Bush, and former

presidential hopeful Governor Jeb Bush all refuse to endorse Trump, fueling the “Never Trump” machine.

Senate Majority Leader Mitch McConnell (R-KY) has said he will support and vote for Trump while Senate Finance Committee Chair Orrin Hatch (R-UT) wants to meet with Trump. Reince Priebus, RNC chair, declared Trump the party’s presumptive nominee even as former Vice President Dick Cheney said he will vote for Trump as the party’s nominee.

Trump’s late-May Washington, DC, foray to meet with House Speaker Paul Ryan (R-WI) was explicitly designed to court GOP congressional leadership, lining up as many public endorsements and commitments to attend as he can before the July convention. However, establishment party confidence in a Trump candidacy is still elusive in the House of Representatives. Trump was stung by Ryan’s mid-May announcement that he “wasn’t ready” to endorse Trump, pending a meeting with the candidate to find out just where the New York businessman stands on issues important to Ryan and, by extension, to elected Republican lawmakers. Given the nominee’s influence over GOP convention operations, Ryan even said he would step down as convention chair if Trump asked him to. Several analysts said Ryan – like many of his colleagues – would just as soon avoid Cleveland.

Right now, the critical unifying move for both Clinton and Trump is the selection of a vice president candidate. Clinton needs to select a running mate who will toe the Clinton line on policy positions, specifically let her drift back toward center left while appealing to the broader Democrat base some

*Continued on page 9*



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# California Renderers Remain Challenged

Facing increased competition, declining prices, and new government regulations, some California renderers are altering the way they do business, creating challenges for meat producers, other raw material suppliers, and the rendering industry itself.

Members of the Rendering Industry Advisory Board (RIAB) met in early May to not only receive an update on the California Department of Food and Agriculture's (CDFA's) inedible kitchen grease program, but to advise the department on the industry's concerns over two rendering companies ceasing to collect deadstock and meat and bone material in the central and northern part of the state.

On the central coast of California, Salinas Tallow stopped collecting meat by-products and sold its grease collection routes to SeSequential of Portland, Oregon, in April. SeSequential is leasing the equipment at Salinas Tallow's facility in Salinas to process the used cooking oil it collects in the region before shipping the product to its biodiesel plant in Salem, Oregon.

"It was a very tough decision for Bill [Ottone] and I to make being a family-owned and operated business in its fourth generation that had been in business for 98 years," Phil Ottone of Salinas Tallow told *Render*. "Our primary reason for selling was indeed FSMA [Food Safety Modernization Act]. We couldn't justify spending a lot of money retrofitting our plant to be compliant. Other factors included Bill's desire to retire and us not really having a succession plan in place as we didn't have anybody from the next generation currently working for our company.

"We certainly had a good run and it was by no means a sale because of distress," Ottone continued. "The timing just seemed right for us."

As for the meat by-products Salinas Tallow previously collected, other renderers in the state have stepped up to continue servicing those clients and material at this time, but the location could eventually make it logistically difficult for these companies to continue.

Meanwhile, North State Rendering in Chico, California, notified its clients just days before the RIAB meeting that it

would no longer be collecting their raw material. In a letter sent to customers in late April, President Chris Ottone said, "North State Rendering will no longer be picking up your meat scraps, offal, hides, or deadstock due to the decrease of the market value of the finished product, trucking expense, and processing of the product. This decision has been incredibly hard for our company to make." North State Rendering will continue to operate its used cooking oil and grease trap operations and anaerobic digester.

As the only renderer north of Sacramento, customers in the region are now scrambling to find an alternative. Sacramento Rendering has been fielding numerous calls for service and could perhaps reach some locations, but many are hundreds of miles away from the renderer's facility in the capital city or located in the difficult-to-reach northern coastal range where roads are winding and narrow. In addition, a program in the state that subsidizes waste hauling companies for diversion of food waste is increasing competition for this material so renderers are hesitant to invest money in an area where others are provided government incentives. CDFA officials will discuss the situation with the state's agriculture secretary for possible solutions.

Meanwhile, CDFA staff reported that grease theft activity in the state is down, most likely due to lower prices for the material. Citations have been issued by California Highway Patrol (CHP) and local police departments in the northern part of California primarily because of improper registration documents to haul grease. CDFA inspectors will begin performing random interceptor grease trap and pumper manifest audits to ensure compliance, and will provide CHP with an updated list of the vehicle codes that apply to the program for inclusion in officers' ticket books.

Visitors to the inedible kitchen grease program's website can now search the database for grease haulers by decal and license plate number, not just by decal. CDFA will also make available on the website a training presentation and will seek to fill a vacancy on the RIAB created after the resignation of Chris Ottone. **R**

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contend is slipping away from her. She also needs to shore up support in key swing states. Observers say 74-year-old Sanders is not an option for the “heartbeat away” position and the much-discussed notion of Senator Elizabeth Warren (D-MA) is overhyped in the press. While Warren is more left than Clinton on several issues, she brings no strong political advantage, is too “East Coast,” and some argue the two politicians on a national party ticket is not unique or advantageous. The list of possible candidates who meet most of Clinton’s priorities include relatively unknown Senator Sherrod Brown of Ohio, a liberal key swing state lawmaker; either Senator Tim Kaine or Senator Mark Warner of Virginia, an increasingly important state; or sitting Department of Housing and Urban Development Secretary Julian Castro, a young Texan who could shore up the Hispanic vote. Senator Amy Klobuchar of Minnesota is also talked about.

For Trump, the challenge is to find a running mate who is willing to stand with the real estate executive and who brings gravitas to the ticket, not unlike the challenge faced by a relatively inexperienced Obama in 2008 with his selection of then-veteran Senator Joe Biden as a running mate. Trump recognizes he lacks political experience and credibility with Capitol Hill, particularly when it comes to foreign affairs. The presumptive nominee has said he will be looking for a vice president who is a known quantity on the Hill, someone who can broker deals. Heading the vice presidential search is Dr. Ben Carson, once a Trump primary opponent.

Among the names insiders toss out are Trump’s former primary opponents Cruz, Senator Marco Rubio, and Governor John Kasich. The question here is can any or all of them shrug off the personal and political attacks of primary season in the interest of party unity and accept the number two spot on the ticket. Of the three, Kasich brings the most political advantage to the ticket, hailing from Ohio with a congressional and gubernatorial record of problem solving.

Another name floated is Alabama Senator Jeff Sessions who was one of the first sitting senators to endorse Trump and who is now Trump’s chief foreign policy advisor and head of the candidate’s foreign policy team. Also mentioned is former House Speaker Newt Gingrich, a known political dealmaker but with considerable political baggage of his own and little foreign policy experience. Governor Chris Christie of New Jersey makes the list having already been named Trump’s head of transition should he win in November, yet most think Christie covets the attorney general slot over the vice presidency.

Turning to sitting governors, rising GOP star Governor Nikki Haley of South Carolina, a woman from the South who checks off a number of boxes to balance a Trump ticket, was an early favorite but Trump appears to have dismissed the possibility. New Mexico Governor Susan Martinez, who could appeal to women and Hispanic voters, has been critical of Trump and says she is not interested. Also at least talked about are Florida Governor Rick Scott, Oklahoma Governor Mary Fallin, Governor Jan Brewer of Arizona, and Governor Brian Sandoval of Nevada.

Both campaigns have pivoted, increasingly taking each other head on. Clinton takes the occasional swipe at Sanders and Trump strays off message to attack this or that critic of

his style and statements. No one is surprised by predictions that this run for the White House will be the ugliest in recent memory. However, both candidates are battle tested and can give as good as they get.

For Clinton, she needs to reassert her executive image but also needs to project greater personality and credibility, keeping in mind less than 35 percent of the voting public find her trustworthy. She cannot afford to allow Trump to get to her with personal attacks and the re-dredging of issues long thought buried. She needs to stay above the fray, incrementally moving her campaign back to center left where she has long been comfortable and where the voters expect her to be. However, she is embracing some Sanders’ priorities as the convention nears, evidenced by her reversal on Medicare buy-ins for seniors. Clinton will need to identify the when and how she distances herself from Obama’s record, mitigating the concern among undecided Republicans and independents that a Clinton presidency is a simple extension of an Obama presidency.

For Trump, he must win key blue states from Clinton with New York, Pennsylvania, Ohio, and Florida targeted for major efforts given his strong showing in those states’ primaries. It is also time for him to dial down the made-for-TV rhetoric, end the personal attacks, and focus on issues and policies, particularly as they relate to the economy, the perennial top priority of the vast majority of voters. Surrogates for the New York City businessman increasingly say the “real” Trump is intelligent, thoughtful, measured, and eagerly seeks advice and counsel from those he respects and that post-convention a different Trump will emerge, one who talks specific issues and problem remedies. He will continue to attack, they say, but only on Clinton’s record and her policies and positions. As president, says Gingrich, Trump will surprise with his cabinet selections.

Pre-convention, very few out there can say with any specificity exactly where Trump stands on issues ranging from trade to health care to tax reform. It is no secret a lot of voters across the country wish there was a “none of the above” box to tick on their November 8 presidential ballot, with fully 15 to 18 percent of most poll respondents saying they intend to vote for “another candidate” or not vote at all. The rumblings of a third-party candidate emerging post-convention continue, with Cruz saying in mid-May he would reconsider the suspension of his campaign “if things change” with Trump. However, a third candidate, particularly one coming from the far right, siphons votes from the Republican side of the scoreboard, making a Clinton victory more of a certainty.

Having said all of that, as of mid-May, Clinton is predicted to beat Trump in the general election by anywhere from four to 13 points, depending on the poll. However, as this presidential cycle has shown time and again, polls can be wrong – dramatically so – and conventional wisdom ain’t what it used to be. Clinton’s lead over Trump is narrowing significantly now that the voting public is focusing on just two candidates, not 17.

So, what do we know for sure? That the old rules do not apply. Odds makers expect the unexpected and at the end of the day November 8, it is the candidate who garners 270 or more Electoral College votes who gets to call 1600 Pennsylvania Avenue home for the next four years. **R**

# Chemical Hazards

## Their source and control

By Charles Starkey, PhD  
Auburn University

**T**his is the second article in a series that aims to assist renderers, their suppliers, and their customers better understand the complexities of potential contaminants in rendered products (the first, “Physical Hazards in Raw Material: Their source and control,” appeared in the June 2015 *Render*). The goal is for these articles to help renderers complete animal food safety plans, meet requirements in the new Food Safety Modernization Act (FSMA), and control potentially harmful hazards in rendered products.

Whenever discussing any food safety topic, it can be difficult to know exactly where to start so this discussion on chemical hazards in rendered products will begin with the raw material source and traverse the rendering process. While the information below may be second nature to many readers, hopefully it will help others to better understand potential hazards and good manufacturing practices that can minimize chemical contamination.

The origination of most contaminants renderers contend with comes from raw material suppliers. It is important to note that these contaminants are not intentionally introduced but occur because of accidental inclusion or, in some cases, poor training and understanding of the further use of raw materials. It is still uncertain at this time whether or not many raw material suppliers will have to follow the requirements of FSMA. With that said, it will still be the responsibility of the rendering and feed industries to reduce or eliminate the risks posed by potentially harmful contaminants. Within the FSMA regulation, feed ingredient suppliers and feed manufacturers will be required to maintain an approved supplier list.

Because of this obligation, renderers will need to develop an approved supplier program in which suppliers are provided detailed specifications, including that raw materials contain no unacceptable contaminants. Check that contractual agreements include these agreed-upon product specifications. In addition, work with suppliers to make certain they have all the training materials needed for their employees to understand the issues surrounding food safety regulations and what the raw materials are ultimately used for.

Here are some items to include in discussions with suppliers (both raw material and other ingredients): Does the supplier keep an up-to-date record of chemical use in their facility? Are the chemicals used according to Food and Drug Administration (FDA) food production regulations? Are suppliers aware that finished rendered products are regulated under FSMA, which

requires renderers to accept only raw materials that will allow them to be compliant? Does the supplier have a hazard analysis and critical control point (HACCP) or FSMA plan in place for the raw material that includes a section on chemical hazards? Has a raw material specification document been developed?

The most beneficial step the rendering industry can take is to work with suppliers to make certain they understand the renderer’s needs and wishes regarding raw materials. The most important thing to realize in this effort is that the sharing of these messages and education programs can never, ever stop and must be ongoing with dedicated personnel. Employee turnover, among other issues, will require that suppliers be continually reminded to eliminate sources of contaminants. Moving forward, it will be necessary to work closely with suppliers and engage their assistance to make sure their raw material streams are treated in a similar fashion as their food product streams.

### Supplier’s Role in Elimination of Chemical Contaminants

While many suppliers of raw materials will not have to submit to FDA inspections under the new FSMA regulation (i.e., grocers, butchers, farms, etc.), they will have to comply with this rule in order to supply renderers with material that is safe to use. Raw material suppliers should already have some sort of HACCP (if required) or food safety plan in place to validate best practices and the safety of their food products. It is really a simple matter to add the flow of their raw materials to this plan and ensure safety of these products as well.

All companies are required to control chemical use and have ready access of all chemical Safety Data Sheets (SDSs). There are some great programs like MSDS Online and others to help keep track of this information or to search for additional SDSs. When developing the supplier relationship and agreeing on specifications for the raw materials received, renderers should request copies of these plans and the corresponding SDSs. The manner in which these chemicals are used within the supplier’s facility must follow the rules set out by FDA for food contact, food contact surfaces, and non-food contact surfaces. This review of chemical usage by the supplier is important so no unwanted chemicals enter the raw material stream inadvertently. It is also important for renderers to employ personnel with a good working knowledge of the approved food chemicals and for those personnel to be able to offer alternative solutions to raw material suppliers. It is also

imperative that renderers work with their suppliers to help them understand that raw materials cannot be collected unless only acceptable chemicals are used in the food production process. Remember that everyone must share in the liability and responsibility of producing safe animal foods.

### Common Chemical Groups to Consider

There are many chemicals that may be used by both the supplier and rendering facility. Below are some chemical groups that need to be addressed.

*Lubricants:* It is preferable that renderers and raw material suppliers use food-grade lubricants in their facilities. These may be slightly more expensive, but these products have become more common and improved over the years. However non-food grade is sufficient provided the raw material and rendered product are not contaminated with the lubricant. Ideally, a closed processing system will ensure any lubricant does not contaminate the material.

*Cleaning and sanitation:* Always evaluate these chemicals to determine if they are safe to use. The supplier must take all possible steps to make sure the raw material flow is not contaminated with cleaning chemicals and sanitizers. This is an area that may be overlooked in some plans so make certain suppliers are aware of the issue.

*Processing or treatments aids:* These chemicals include processing aids that may be used for product, wastewater, or raw material treatment. It is important to know how and where such products are used and ensure they are not a source of contamination.

*Pesticides, herbicides, and other-use chemicals:* These must never be allowed to enter the raw material flow. Specific plans should be in place to assure that the supplier as well as the renderer control the use of these products so they do not make contact with food or raw materials. It is also important that any food contact surface where these chemicals may be applied is completely cleaned and drained to an alternative water treatment area.

Additional items like antimicrobials, pharmaceuticals, personal care products, and so on should also be discussed with the supplier to make sure that none of these products have a way of entering the raw material stream. It may be beneficial to test the water supply of both the rendering plant and the supplier to check that none of these chemicals are entering in that manner. At times there are contaminants that can be present in municipal or rural water systems that are not removed in their treatment process.

### Rendering's Role in Removing Chemical Contaminants

The following are some additional procedures to assist in eliminating potentially harmful chemical contaminants from the rendering process stream. This is not a complete list, but a few suggestions that can help.

When receiving raw materials at the facility, it is essential to evaluate the product prior to placing it into the process stream. Is every load delivered to your facility inspected? If not, be sure to inspect raw materials, when possible, prior to

them being placed into a receiving bin or tank. While chemical contaminants can rarely be seen with the naked eye, the inspection process can catch chemical containers that may have accidentally entered the raw material.

The next decision is what to do if the load is contaminated. Should the load be rejected? (The best answer would be yes.) Is the raw material supplier notified? Are records kept and evaluated as to the frequency of adulterated products received from suppliers? Are these records shared in formal meetings with suppliers? It is always best to reject a chemically-contaminated load prior to receiving it into a facility.

Once the raw materials have been put into the process stream, it is then the obligation of the rendering facility to ensure no potentially harmful chemicals are present or introduced by the facility itself. The need to prevent the introduction of chemicals used in the rendering process itself cannot be stressed enough. Employees must be adequately trained on proper use of all chemicals and provided direction on when and where it is appropriate to use such chemicals.

The use of chemicals in and around the rendering facility must be closely monitored. Chemicals should be used only by properly trained personnel and stored outside the production areas in approved containers or chemical storage cabinets.

Use an additional testing procedure for chemical contaminants in finished products prior to shipment. Although this is something renderers have done for some time, it is still a good procedure to follow if and when possible.

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**Under FSMA, renderers will need to develop an approved supplier program in which suppliers are provided detailed specifications, including that raw materials contain no unacceptable contaminants.**

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Many individuals in upper management and operations may say, "We have heard and tried all of these before." That may be the case, but what about newer employees? Do they understand the importance of the quality requirements of the finished product? Do they understand the general

substance of new regulations? Has this sentiment been adequately expressed within and throughout the company? Everyone must be involved in any good quality system in order for it to work. If one person is not thinking about quality in their job, it could lead to contamination and possibly a recall situation that can get very expensive very quickly. It is understood that implementing more security measures can cost both money and time as well as make the process more difficult, but if the manufacturing of animal feed ingredients and other products was easy, then everyone would be in the business. Each rendering facility, and not others in the food/feed chain, is ultimately responsible for removing these contaminants prior to shipping finished products so implementing more standard procedures will ensure this is accomplished.

It will take the dedication of personnel, time, and money to control potentially harmful hazards. Along with it being required in new FSMA regulations, removing hazards is the right thing to do. There is never any reason to place humans or animals at risk from the feed ingredients manufactured in rendering facilities. The rendering industry has been and will continue to be a leader in ensuring safe ingredients for use in the animal food chain.

**R**

# Renderers Tackle Complex Issues

By Tina Caparella

The National Renderers Association (NRA) held its annual spring meeting in April to continue moving forward on defining rendering as sustainable and update its members on upcoming regulations and international markets.

During the Sustainability Committee meeting, the tenets of rendering were described as producing safe food/feed, community and employee responsibility, environmental stewardship, and responsible productivity. Some metrics being examined include the industry's investments in odor control, employee retention, rendering's carbon footprint calculator developed at Clemson University, renewable fuels produced and used, and rendering's contribution toward keeping grease out of municipal sanitary sewage systems. In addition, rendering's diversion of material from landfills and providing other industries (i.e., food animal producers) a service so they can be sustainable need to be highlighted. Steve Kopperud, SLK Strategies, noted that all major food animal producer groups are implementing sustainability programs but are seldom including rendering in the matrix. On the flip side, the American Feed Industry Association has just launched the "public" side of its sustainability plan after years of internal work and rendering is an important part of the program.

"Using animal by-products means using less land, water, and pesticides for growing vegetable forms of feed ingredients," said Sustainability Chairman Ross Hamilton, Darling Ingredients Inc.

It was announced in NRA's Feed Regulatory Committee meeting that the Food and Drug Administration (FDA) cited the *North American Rendering Industry Code of Practice* in its Sanitary Transportation of Human and Animal Food final rule released in early April. The reference was given as an

example of industry third-party programs that help meet the new regulation's requirements (see "FSMA Sanitary Transportation Rule Finalized" on page 14). Stan Gudenkauf, American Proteins Inc., commended Dr. David Meeker, NRA scientific services, for his hard work on new FDA regulations on behalf of the rendering industry.

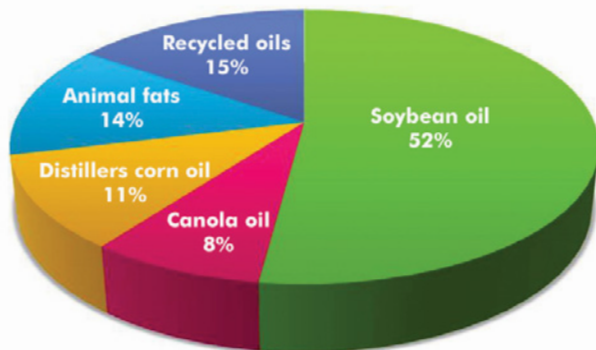
Biofuels Committee Chairman Doug Smith, Baker Commodities Inc., pointed out that animal fat and used cooking oil use in biodiesel has increased over the years and now accounts for 29 percent of all feedstocks (see chart 1). In addition, 31 percent of all feedstocks used to produce renewable diesel are animal fat and used cooking oil because they are more economical feedstocks and have a greener carbon footprint (see chart 2). Smith shared a biodiesel infographic that shows the value of using animal fats in biodiesel.

"We have made an impact on their industry and we'd like to continue that relationship," Smith commented. He added that the current blender's tax credits expire at the end of this year, which coincides with the end of the current Congress' term. NRA and the National Biodiesel Board are working to extend the tax credits for future years.

After an extensive update from Environmental Committee Chairman Bob Voger, Valley Proteins Inc. (see Tech Topics on page 36), Michael Koewler, SRC Companies, informed the group on activities in California. The state's Department of Resources Recycling and Recovery, or CalRecycle, is earmarking \$200 million in funding each year for the next 10 years for landfill diversion, causing waste management companies to look at collecting fat and bone material.

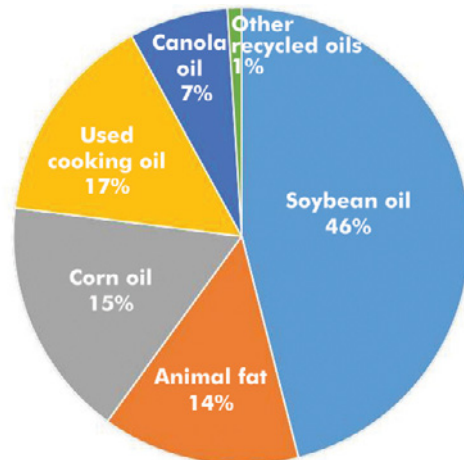
"CalRecycle should be technology neutral," Koewler stated. California renderers are trying to educate the department on

**Chart 1. Estimated feedstock use in biodiesel, 2015 (January-November)**



Source: Energy Information Administration 22M survey.

**Chart 2. Estimated feedstock use in biomass-based diesel (renewable diesel), 2015**



the importance of rendering by using the federal Environmental Protection Agency's Food Recovery Hierarchy chart that places the importance of diverting food scraps to feeding animals above landfilling. On the flip side, the California Air Resources Board has recognized the importance of rendered products to the biofuels industry in their legislation and grants. National efforts on food waste recycling have been escalating the last few years so the NRA Legislative Committee has put the issue on its radar screen to ensure rendering is treated fairly in any future legislation.

**International Markets**

NRA's International Market Development Committee focused on the challenges and opportunities for exports of rendered products. Peng Li, NRA regional director for Asia, said, "China will continue to be very important for our industry." The country just approved the importation of inedible tallow from the United States so renderers can now apply to export to that market. Li noted that China's feed industry is challenged but its soap industry is stable. He added that Indonesia is the most important market for animal proteins as the twelfth largest feed producer in the world.

German Davalos, NRA regional director for Latin America, reported that exports of animal fats from the United States (US) into Mexico were down in 2015 due to competition from South America. Some good news is that Costa Rica has opened its borders to ruminant meat and bone meal for use in pet food and poultry, pork, and aquaculture feed. Nicaragua formally approved the product's acceptance in March while other Central American countries "verbally" allow imports of US ruminant meat and bone meal but have not put it in writing.

Focusing on the European Union (EU) was Bruce Ross, Ross Gordon Consultants SPRL, who informed NRA members that the US Trade Representative is now working on negotiations to get US tallow back into the EU for industrial purposes. Meanwhile, used cooking oil from the United States is going into the EU in large quantities. However, some organizations are looking at curtailing that, including the Federation of Oils, Seeds, and Fat Associations that added used cooking oil and used cooking oil methyl esters to its list of "banned

immediate previous cargos." Ross said this action could raise shipping costs, particular for barges on internal waterways. The federation claims the action is over concern about the "lack of transparency and traceability of used cooking oil origination."

Ross shared that the European Commission's latest report shows bovine spongiform encephalopathy (BSE) continues to be at very low levels in the 28 member countries, with 11 cases being reported in 2014 out of nearly 2.3 million animals tested. Only three cases were classical BSE, with the rest being atypical BSE.

Dr. Romina Hennig, US Department of Agriculture (USDA)/ Animal and Plant Health Inspection Service (APHIS), updated committee members on regulatory matters in Mexico for ruminant meat and bone meal and the China tallow market. APHIS has been participating in discussions with Mexican officials as they attempt to revise its outdated animal by-products regulation put in place in 1999.

"Everyone here has a stake in this and is willing to help APHIS with any export issues," Kent Swisher, NRA international programs, told Hennig.

USDA has been working with Chinese officials with NRA support for a number of years to gain market access for US tallow. Hennig stated that a protocol has been signed, a Chinese questionnaire completed, and with the assistance of NRA, requested information has been submitted to China. The first US facility has been approved and assigned a registration number, and a health certificate has been agreed upon so USDA anticipates the flow of tallow to China is imminent. **R**



Dr. Romina Hennig explains USDA's efforts toward opening international markets for rendered products.



Kent Swisher, NRA international programs, shows the matched government funding the industry receives to promote rendered products overseas.



# FSMA Sanitary Transportation Rule Finalized



**T**he Food and Drug Administration (FDA) Food Safety Modernization Act (FSMA) final rule on Sanitary Transportation of Human and Animal Food was published in the April 6, 2016, *Federal Register* and advances FDA's efforts to protect foods from farm to table by keeping them safe from contamination during transportation. The earliest compliance date for some firms begins one year after publication of the final rule. Most renderers are likely already in compliance, according to the National Renderers Association (NRA), particularly if they are certified in the *North American Rendering Industry Code of Practice* administered by the Animal Protein Producers Industry (APPI). The final rule is available at [www.gpo.gov/fdsys/pkg/FR-2016-04-06/pdf/2016-07330.pdf](http://www.gpo.gov/fdsys/pkg/FR-2016-04-06/pdf/2016-07330.pdf).

This rule is one of seven foundational rules proposed since January 2013 under FSMA to create a modern, risk-based framework for food safety. The goal of this rule is to prevent practices during transportation that create food safety risks, such as failure to properly refrigerate food, inadequate cleaning of vehicles between loads, and failure to properly protect food. The rule establishes requirements for shippers, loaders, carriers by motor or rail vehicle, and receivers involved in transporting human and animal food to use sanitary practices to ensure the safety of that food. The requirements do not apply to transportation by ship or air because of limitations in the law. Specifically, the rule establishes requirements for vehicles and transportation equipment, transportation operations, records, training, and waivers.

## Who is Covered?

With some exceptions, the final rule applies to shippers, receivers, loaders, and carriers who transport food, including food for animals, in the United States (US) by motor or rail vehicle, whether or not the food is offered for or enters interstate commerce. It also applies to persons (e.g., shippers) in other countries who ship food to the United States directly by motor or rail vehicle (from Canada or Mexico), or by ship

or air, and arrange for the transfer of the intact container onto a motor or rail vehicle for transportation within the United States, if that food will be consumed or distributed in the United States.

The rule does not apply to exporters who ship food through the United States (for example, from Canada to Mexico) by motor or rail vehicle if the food does not enter US distribution. Companies involved in the transportation of food intended for export are covered by the rule until the shipment reaches a port or US border.

## Key Requirements

Specifically, the rule establishes requirements for the following.

**Vehicles and transportation equipment:** The design and maintenance of vehicles and transportation equipment to ensure they do not cause the food transported to become unsafe. For example, they must be suitable and adequately cleanable for their intended use and capable of maintaining temperatures necessary for the safe transport of food.

**Transportation operations:** The measures taken during transportation to ensure food safety, such as adequate temperature controls, preventing contamination of ready-to-eat food from touching raw food, protection of food from contamination by non-food items in the same load or previous load, and protection of food from cross-contact (i.e., the unintentional incorporation of a food allergen).

**Training:** Training of carrier personnel in sanitary transportation practices and documentation of the training. This training is required when the carrier and shipper agree that the carrier is responsible for sanitary conditions during transport.

**Records:** Maintenance of records of written procedures, agreements, and training (required of carriers). The required retention time for these records depends upon the type of record and when the covered activity occurred, but does not exceed 12 months.



## Industry Comments Heard

NRA is pleased that the final rule was revised in several important sections in response to comments NRA submitted on behalf of renderers, and that the APPI *Code of Practice* was mentioned specifically by FDA as a tool for compliance.

On page 20092 under the summary of the major provisions of the rule, FDA states: “We made several revisions to this final rule, in response to comments that we received regarding the proposed rule, to affirm that the use of current sanitary food transportation best practices as described in these comments, e.g., the “Rendering Industry Code of Practice” and “Model Tanker Wash Guidelines For the Fruit Juice Industry,” will allow industry to meet the requirements of this rule. Some of these best practices have been provided to the Agency as industry documents submitted with comments in the proposed rule, while others were described in the comments or the public meetings we held for the proposed rule.”

Below are some of the main points of the rule impacting rendering, which include many of NRA’s recommendations.

In response to comments about the proposed rule’s provision for transportation equipment used in operations involving food materials destined for animal consumption, FDA responded that “...we would not regard a transportation vehicle used to haul materials destined for rendering, e.g., viscera, offal, trimmings from slaughter operations, to be operating under insanitary conditions, given that the vehicle’s intended use is to haul materials that will undergo further processing to make them suitable for animal consumption. We also would not regard rendering materials in transport to be adulterated for the same reason. However, we note that those engaged in transport of materials destined for rendering should consider whether previous cargo that could cause the material to be unsafe due to potential chemical contamination is a relevant consideration.”

FDA also addressed the rendering industry’s comments about the proposed rule’s requirement for proper temperature control of “food” during transport to prevent the “rapid growth of undesirable microorganisms”: “We would not regard an unrefrigerated transportation vehicle used to transport bulk materials destined for rendering to be in violation of this rule because the vehicle’s intended use is to transport materials that do not require temperature control because they will undergo a subsequent heat processing treatment to destroy pathogens. We also would not regard rendering materials in transport, e.g., viscera, offal, trimmings from slaughter operations, to be adulterated for the same reason.”

FDA further commented in the final rule that they “agree that it would not be necessary to provide temperature control during the transportation of ingredients destined for rendering because these materials will eventually be treated with high heat to destroy pathogens. As we have previously stated, we have revised this final rule so that it focuses entirely on food safety issues. For this reason, control of temperature during transportation would not be required by the rule if such control is not necessary to ensure its safety, e.g., where its only purpose is to minimize decomposition of the food.”

Renderers will be required to identify the vehicle’s previous cargo from shippers supplying raw materials to a rendering operation, as stated on page 20150 of the final rule: “While we recognize that materials destined for rendering will receive a heat treatment to destroy pathogens, we are not exempting carriers from the requirement that they identify the vehicle’s previous cargo to the shipper supplying raw materials to a rendering operation because the shipper might wish to determine whether the bulk vehicles carried some previous cargoes that could contaminate the raw material in a way that would not be addressed by the heat processes of the rendering operation (e.g., heat stable chemical contaminants). We are retaining this provision to allow the shipper to obtain this information from the carrier, if the shipper deems it necessary for the purposes of ensuring that his product does not become unsafe during transportation.”

Requirements for shippers to ensure that a previous cargo does not make the food unsafe is addressed on page 20151: “...we have revised this rule at § 1.908(b)(4) to require the shipper to develop written procedures adequate to ensure that a previous cargo does not make the food unsafe. These procedures may describe actions that the shipper may take to provide this assurance (e.g., cleaning the vehicle, using a dedicated vehicle), or they can include actions that the carrier in accordance with § 1.908(e) or another party covered

by this regulation may take to provide this assurance (e.g., cleaning the vehicle, providing a dedicated vehicle).”

NRA also asked FDA in its comments to the proposed rule that 21 *Code of Federal Regulations* Part 11 (electronic records and

signatures) not be the standard required for records under this rule. FDA agreed that redesigning large numbers of existing electronic records and recordkeeping systems would create a substantial burden without measurable benefit so electronic records are exempt from the onerous requirements of part 11. FDA also made this change to the “Current Good Manufacturing Practice and Hazard Analysis and Risk-based Preventive Controls for Food for Animals” final rule last year.

However, records do need to meet standards as stated on page 20155: “Although we are not specifying that part 11 applies, we expect parties covered by this rule to take appropriate measures to ensure that records are trustworthy, reliable, and generally equivalent to paper records and handwritten signatures executed on paper.”

## Compliance Dates

Small businesses, which are businesses other than motor carriers who are not also shippers and/or receivers employing fewer than 500 persons and motor carriers having less than \$27.5 million in annual receipts, would have to comply two years after the publication of the final rule, which was April 6, 2016. A business that is not small and not otherwise excluded from coverage would have to comply one year after the publication of the final rule.

R

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**Most renderers are likely already in compliance, according to the National Renderers Association, particularly if they are certified in the North American Rendering Industry Code of Practice administered by the Animal Protein Producers Industry.**

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# APPI Membership: Continuous Improvement

The Animal Protein Producers Industry (APPI) oversees the rendering industry biosecurity programs in North America. APPI programs feature ways to control biological, chemical, and physical hazards and to comply with changing feed regulations. APPI is a committee within the National Renderers Association and is open to all renderers.

APPI's mission is to assist member companies in manufacturing safe products. The *North American Rendering Industry Code of Practice* corresponds very closely to the biosecurity initiatives taking place throughout the entire food chain and furthers the concept of safe feed – healthy livestock – safe food – healthy people. With continued intense scrutiny on all feed ingredients, the development of the *Code of Practice* by renderers shows great foresight. The leading edge of the rendering industry is renderers who participate in this *Code of Practice*, with a list of participants at [www.nationalrenderers.org/biosecurity-appi](http://www.nationalrenderers.org/biosecurity-appi). This certification

includes independent third-party audits and aligns with the new Safe Feed/Safe Food program from the American Feed Industry Association. Certifying with the latest version of the *Code of Practice* will:

- ensure compliance with the Food Safety Modernization Act;
- assure customers that a renderer is a verified safe supplier;
- offer a single audit for recognition by two well-known programs;
- help employees take pride in their work; and
- identify opportunities for continuous improvement.

APPI will continue to develop innovative programs to promote the safety of animal proteins and feed fats through testing, continuing education and training, and collaborative research. When new regulations are issued, APPI programs will make needed adjustments to keep participants up-to-date.

**The following 189 plants made a significant commitment to APPI and its testing program in 2015. They are the foundation for safe rendered feed products in the future.**

#### **3D Corporate Solutions**

Pet Solutions, Danville, AR\*  
Protein Solutions, Joplin, MO\*

#### **AB Foods LLC**

Toppenish, WA

#### **American Proteins Inc.**

Alma, GA\*  
Cumming, GA  
Cuthbert, GA  
Hanceville, AL  
Hanceville, AL (pet food div.)

#### **Ampro Products Inc.**

Concordia, MO  
Cumming, GA  
Cuthbert, GA  
Dawsonville, GA  
Gainesville, GA  
Muscatine, IA\*  
Pickensville, AL

#### **Baker Commodities Inc.**

Kerman, CA  
North Billerica, MA  
Phoenix, AZ  
Rochester, NY  
Seattle, WA  
Spokane, WA  
Vernon, CA

#### **BHT Resources**

Bessemer, AL

#### **Boyer Valley Co.**

Arion, IA

#### **Cargill Meat Solutions**

Dodge City, KS  
Friona, TX  
Ft. Morgan, CO  
Highriver, AB, Canada  
Schuyler, NE  
Wyalusing, PA

#### **Clemens Food Group**

Hatfield, PA

#### **Clougherty Packing**

Vernon, CA

#### **DaPro LLC**

Huron, SD

#### **Darling Ingredients Inc.**

Bastrop, TX  
Berlin, WI  
Blue Earth, MN  
Butler, KY  
Clinton, IA  
Coldwater, MI  
Collinsville, OK  
Crows Landing, CA  
Dallas, TX  
Denver, CO  
Des Moines, IA  
Ellenwood, GA  
East Dublin, GA  
Fairfax, MO  
Fresno, CA  
Houston, TX  
Jackson, MS

#### **Darling Ingredients Inc. (continued)**

Kansas City, KS  
Kansas City, KS (blending)  
Kuna, ID  
Lexington, NE  
Los Angeles, CA  
Lynn Center, IL  
Mason City, IL  
National Stock Yards, IL  
Newark, NJ  
Newberry, IN  
Omaha, NE  
Omaha, NE (blending)  
Russellville, KY  
San Francisco, CA  
Sioux City, IA  
Tacoma, WA  
Starke, FL  
Tampa, FL  
Union City, TN  
Wahoo, NE  
Wichita, KS

#### **Farmers Union Industries LLC (Central Bi-Products)**

Redwood Falls, MN  
Long Prairie, MN

#### **Fieldale Farms Corp.**

Cornelia, GA  
Eastanollee, GA

*Continued on page 18*



## Rendered Products Are Safe.

**As an essential link in the food chain**, the rendering industry is conscious of its role in the prevention and control of bacteria and virus, to provide safe feed ingredients for livestock, poultry, aquaculture, and pets. Every effort is made to ensure that cooking destroys microbes, and that recontamination does not occur after the rendering process.

Since 1985, the Animal Protein Producers Industry (APPI) has coordinated a program of education and laboratory testing for renderers to control *Salmonella*. Now, APPI offers a sophisticated training and process testing to offer the most appropriate controls and practices to best assure safe products. Our advanced feed safety programs include strategies to control biological, chemical, and physical hazards that can occur in animal production and processing systems. A concerted effort is made to foresee any hazard likely to occur and to build prevention of risk into manufacturing. Process controls in rendering verify that cooking temperatures control microbial and viral contamination. These programs also concentrate on recontamination prevention with rodent control, plant and transport sanitation, and other biosecurity measures.



More than 90% of rendered product in the U.S. and Canada are produced under principles in the Rendering Code of Practice or equivalent programs such as HACCP. If you are a customer—ask for these credentials and rest assured. If you are a renderer, make sure you take advantage of these excellent programs.

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For information, contact Dara John at 660-277-3469 or [appi@cvalley.net](mailto:appi@cvalley.net), or visit us on the web at <http://www.nationalrenderers.org/biosecurity-appi/>.

APPI Continued from page 16

**Foster Farms**

Farmerville, LA  
Livingston, CA

**G.A. Wintzer & Son Co.**

Wapakoneta, OH

**Hahn & Phillips Grease**

Marshall, MO

**Harris Ranch Beef Co.**

Selma, CA

**Hormel Food Corp.**

Austin, MN  
Fremont, NE

**Indiana Packers Corp.**

Delphi, IN

**Iowa Protein Solutions**

Estherville, IA

**Island Commodities**

Kapolei, HI

**JBS**

Beardstown, IL  
Brooks, AB, Canada  
Cactus, TX  
Elizabethville, PA  
Elroy, PA  
Greeley, CO  
Green Bay, WI  
Hyrum, UT  
Marshalltown, IA  
Omaha, NE  
Ottumwa, IA  
Seaford, DE  
Tolleson, AZ  
Worthington, MN

**John Kuhni Sons Inc.**

Levan, UT

**Keystone Protein Company**

Fredericksburg, PA

**Kruger Commodities**

Hamilton, MI  
Tama, IA\*

**Maple Lodge Farms**

Brampton, ON, Canada

**Mason City By-Products**

Mason City, IA

**Mid-South Milling Co. Inc.**

Kansas City, KS  
Memphis, TN

**Mountain View Rendering**

Edinburg, VA

**Mountaire Farms of Delaware Inc.**

Millsboro, DE

**National Beef LLC**

Dodge City, KS  
Liberal, KS

**NF Protein LLC**

Nevada, MO\*  
Sioux City, IA (The Andersons  
Nutra Flo)

**Nutri Feeds Inc.**

Hereford, TX

**Nutrimax Inc.**

Laurinburg, NC

**Pilgrim's Pride Corp.**

Mt. Pleasant, TX  
Moorefield, WV  
Sumter, SC  
Timberville, VA

**Protein Products**

Sunflower, MS

**Rothsay**

Dundas, ON, Canada  
Hickson, ON, Canada  
Moorefield, ON, Canada  
Truro, NS, Canada  
Winnipeg, MB, Canada

**Sacramento Rendering**

Sacramento, CA

**Sanimax**

Green Bay, WI  
So. St. Paul, MN  
Charney, QB, Canada  
Montreal, QB, Canada

**S.F. Rendering Ltd.**

Centreville, NS, Canada

**Simmons Feed Ingredients**

Southwest City, MO

**Smithfield Foods Inc.**

Clinton, NC  
Crete, NE  
Denison, IA  
Milan, MO  
Monmouth, IL  
Sioux City, IA  
Smithfield, VA  
Tar Heel, NC\*

**Standard Fertilizer**

Greenburg, IN

**Tallowmasters LLC**

Miami, FL

**Tri Star**

Kansas City, KS

**Tyson Foods**

Clarksville, AR  
Cullman, AL (blending)  
Forest, MS  
Harmony, NC  
Pine Bluff, AR\* (blending)  
Robards, KY  
Scranton, AR  
Sedalia, MO  
Temperanceville, VA  
Texarkana, AR

**Tyson Fresh Meats**

Amarillo, TX  
Columbus Junction, IA  
Dakota City, NE  
Denison, IA  
Hillsdale, IL  
Holcomb, KS  
Lexington, NE  
Logansport, IN  
Madison, NE  
Pasco, WA  
Perry, IA  
Storm Lake, IA  
Waterloo, IA

**Valley Proteins Inc.**

Accomac, VA  
Amarillo, TX  
East Earl, PA  
Fayetteville, NC  
Fayetteville, NC (pet food div.)  
Gastonia, NC  
Lewiston, NC  
Linkwood, MD  
Linville, VA  
Rose Hill, NC  
Strawberry Plains, TN  
Wadesboro, NC  
Ward, SC  
Winchester, VA

**West Coast Rendering**

Vernon, CA

**West Coast Reduction Ltd.**

Calgary, AB, Canada  
Edmonton, AB, Canada  
Saskatoon, SK, Canada  
Vancouver, BC, Canada

**Western Mass. Rendering**

Southwick, MA

**Wilbur Ellis Company**

Gaffney, SC  
Rosser, TX

\*New participant in 2015



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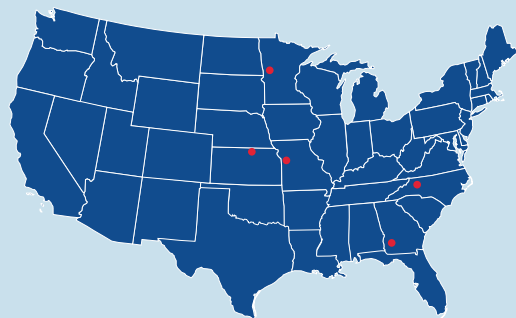
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# Online Training Offered for Code of Practice and FSMA



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The National Renderers Association (NRA) and Animal Protein Producers Industry (APPI) are offering a *North American Rendering Industry Code of Practice* online course that describes the requirements of current good manufacturing practices (CGMP), risk-based preventive controls, and food safety plans under 21 *Code of Federal Regulations* 507, the Food and Drug Administration (FDA) regulation implementing the Food Safety Modernization Act (FSMA) for animal food. There will be particular emphasis placed on identification and evaluation of hazards common to the rendering industry as well as their potential controls. This online course will not result in a certificate from the FDA-recognized training because it is not face-to-face; however, the content will cover similar concepts. This course, in addition to job experience, will prepare participants to develop and apply a food safety plan and be “preventive controls qualified individuals” as described in the FSMA regulation.

The Rendering Code of Practice 201 online course is intended for industry professionals with previous experience in or understanding of the rendering industry. This is an advanced class for participants intending to write, manage, and/or apply feed safety concepts to prevent physical, chemical, and/or

biological hazards in rendered products. Targeted participants include individuals working in or managing rendering facilities, raw material suppliers, users of rendered products, and regulatory officials.

Participants who complete the course will be able to:

- summarize the requirements associated with CGMPs;
- describe a food safety plan and its required components;
- determine if a hazard is a known or reasonably foreseeable hazard and/or is a hazard requiring a preventive control;
- explain the management components for a hazard requiring a preventive control;
- name common hazards requiring a preventive control in raw materials for the rendering industry and their typical controls;

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- describe the required documentation for a food safety plan; and
- identify primary resources that may be useful when writing or implementing a food safety plan for rendered products.

The course instructor will be Dr. Cassie Jones, assistant professor of feed technology at Kansas State University who holds a joint research, teaching, and outreach appointment in the Department of Grain Science and Industry. Her research efforts include evaluating the effects of ingredients or feed processing technologies on feed safety and nutrient utilization. She teaches undergraduate and graduate courses and short courses through the International Grains Program (IGP) Institute. Jones is also on the executive editing team charged by FDA with writing the training curriculum for the preventive controls for the animal food rule.

The five-week course of study will include introduction to the FSMA regulation, examining the food safety hazards in the rendering industry, CGMP requirements, process and sanitation controls, recall plans, and identifying, evaluating, and managing hazards.

Registration is available through the IGP Institute at Kansas State University at [www.igpevents.grains.ksu.edu/packageDetail.aspx](http://www.igpevents.grains.ksu.edu/packageDetail.aspx). Scroll down the page to the Rendering Code of Practice 201 listing and click on "View Details & Register." Cost for NRA or APPI member companies is \$550 per employee while the fee for allied industry or non-member companies is \$700 per employee. **R**

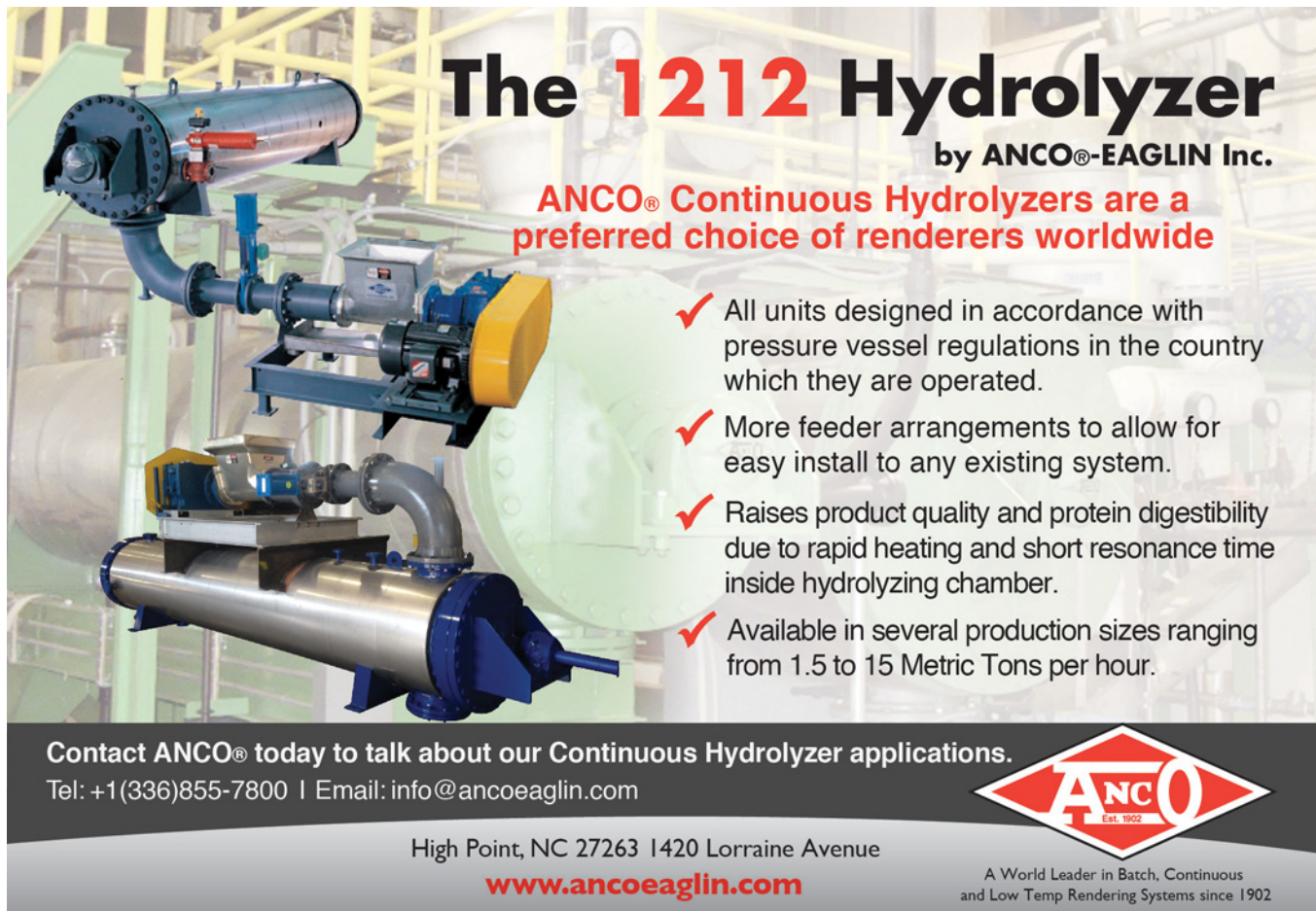
## Video and Posters Available for FSMA Compliance and *Salmonella* Safety

The Animal Protein Producers Industry (APPI) has created a new 10-minute video and related materials for animal food and *Salmonella* safety education to replace the popular *Salmonella* educational materials distributed by APPI for many years. This video and supporting material will also help plants to fulfill the Food Safety Modernization Act (FSMA) requirement that all plant employees be trained in basic food safety concepts.

The kit contains five items in digital format:

- A 10-minute video on animal food and *Salmonella* safety in English (MP4 file)
- A 10-minute video on animal food and *Salmonella* safety in Spanish (MP4 file)
- 10 bilingual posters in a printable PDF illustrating the 10 main points (files can be provided to sign printer of choice)
- A brief animal food and *Salmonella* safety manual in English (PDF)
- A brief animal food and *Salmonella* safety manual in Spanish (PDF)

All the above will be sent on a computer memory stick at a cost of \$500 for APPI and National Renderers Association member companies and \$750 for non-members. To order, contact Dara John at (660) 277-3469 or by email at [appi@cvalley.net](mailto:appi@cvalley.net). **R**



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## Taking Action on a New Strategic Plan

Sometimes it can be challenging to look ahead when you are in the trenches putting out fires and tending to life's demands. However, as Yogi Berra once said, "If you don't know where you're going, you might wind up someplace else." And you may end up where you do not want to be, which is especially unwise in the competitive, ever-changing world of rendering. As business leaders, renderers know how vital it is to keep one eye looking ahead, planning for the future. The same is true for the National Renderers Association (NRA).

Last year, NRA's leadership took a long-range look at the association and its future path to best serve its members, which includes over 95 percent of the rendering industry in the United States and Canada. NRA also has international renderer members and associate members, who provide important services and products to renderers as industry partners.

NRA developed a new 2020 Strategic Plan to meet the needs of the North American rendering industry, which includes integrated meat packers and poultry processors in addition to independent renderers. The industry is diverse yet all face many of the same challenges with government regulation, expanding markets here and abroad, and building support for the freedom to responsibly operate.

NRA committees have started to implement this new strategic plan after its approval by the NRA Board of Directors last fall. It is a five-year plan with traction to work toward new goals with new programs and also to execute well what should be continued.

To recap, NRA's 2020 Strategic Plan envisions a world for rendering where "our global community (will) trust the unique social, environmental, and economic value that NRA members deliver." That is what renderers want for their industry.

NRA's new vision is "to deliver sustainable rendering solutions to our global community." Renderers want to be understood as solution providers and NRA is working to help position them in this way. The association's new mission is to "advocate for a sustainable food chain, public health, and the environment through the production and marketing of rendered products and services."

Sustainability permeates all that renderers do since they are 100 percent recyclers and want to be recognized for this value by their customers, communities, and governments. The priorities to accomplish this new NRA mission are to:

- promote effective public policy, regulation, and technology;
- encourage responsible business practices;
- support free movement of rendered products in domestic and international markets; and
- improve stakeholder awareness and understanding of the value of rendering.

To begin executing the new 2020 Strategic Plan, the NRA board directed all association committees to closely coordinate and align work toward achieving NRA's new vision and mission. Some committees have new priorities

while others are continuing valuable programs.

With sustainability a major new emphasis in the strategic plan, NRA has created a Sustainability Committee, ably chaired by Dr. Ross Hamilton of Darling Ingredients Inc. This committee's goal is to develop social, environmental, and economic metrics with which renderers can benchmark themselves. The committee is currently developing its plans.

Sustainability must be economically viable while socially responsible and environmentally supportable. This is the foundation of NRA's sustainability program. Sustainability is critical for rendering suppliers, customers, and their brands. Even though it can mean different things to different companies, many customers are demanding to know the footprint of rendering operations with which they do business. As solution providers, the industry can help them understand how rendering's sustainability reduces their overall footprint and makes them more attractive to their customers.

NRA intends to build a nationwide industry sustainability profile with member information and findings from research financed by the Fats and Proteins Research Foundation. This foundation is funded by renderers and their industry partners to engage researchers to enhance current and new uses of rendered products, improve processes used to make them, and generate technical data to answer industry challenges.

The strategic plan recognizes that communicating rendering's widespread contributions to the environment, the feed chain, and consumers is vital to maximize the industry's ability to operate freely in a responsible manner. To attract and retain new talent into rendering, millennials can be drawn to what rendering has to offer. Customers need to understand this value to continue driving demand for rendered products. In addition, regulators and legislators are increasingly making decisions based on their understanding – right or wrong – of how socially and environmentally responsible the rendering industry is. This is happening regarding food waste regulations on the West Coast. The new strategic plan directs NRA to increase communications outreach to educate these kinds of important audiences to firmly position rendering for the future.

NRA's Communications Committee is developing data for renderers to provide to food service customers, such as restaurants and hospitals, to explain how used cooking oil is recycled into valuable new products, including biodiesel. With this new information, the food service establishment can tell its customers how it is sustainable and contributing to making the world a better place, both consumer values today.



Nancy Foster



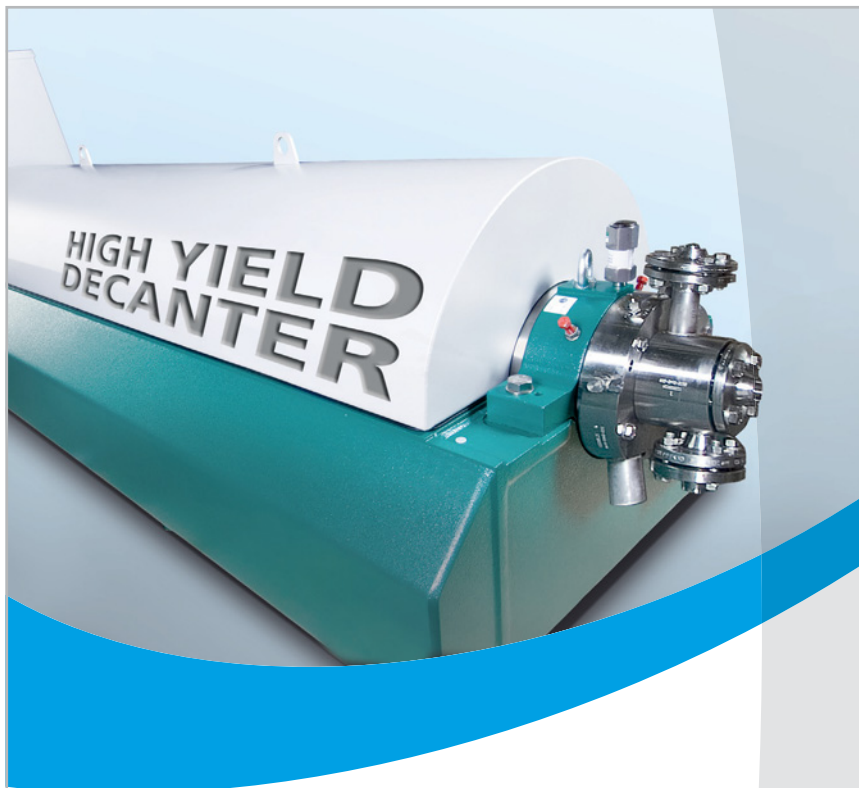
Other communications projects underway include a Rendering 101 teaching module for universities to build awareness among students (and potential new hires), a social media toolkit for NRA members, and an updated North American rendering booklet describing the industry to potential buyers and government officials. NRA will also be adding to its infographics, blog, website, and social media activities.

To implement NRA's new 2020 Strategic Plan, the Animal Protein Producers Industry (APPI) Committee is hosting a two-and-a-half-day training in Denver, Colorado, in June and an online curriculum to teach renderers how to comply with the new Food Safety Modernization Act (FSMA). APPI is putting the finishing touches on a new teaching video with training materials for rendering managers to use so employees understand what they need to do to ensure their company is in compliance. These FSMA trainings are available to NRA members.

FSMA goes into effect this fall for large companies, next year for medium-sized companies, and the following year for small ones. Renderers must comply or face significant penalties from the Food and Drug Administration and customer rejection.

NRA's Convention Planning Committee is adding "hotel sustainability" as a criterion for selecting future NRA meeting venues. At last fall's annual convention, the committee hosted a fundraiser to support a community cause, raising \$40,000 for the Canine Companions for Independence Wounded Veterans Initiative. NRA's other committees are continuing their work to advance the association's new mission and there is no lack of challenges. These include the International Market Development Committee, Legislative Committee, Environmental Committee, Feed Regulation Committee, Biofuels Committee, and Audit and Budget Committee.

NRA's 2020 Strategic Plan has sound traction and support among the North American rendering industry. The association staff also "lives and breathes" it daily. I hope you will join your rendering colleagues and customers to embrace this common vision and path forward for a strong industry in the future. **R**



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## US Biodiesel and Renewable Diesel Imports Up

After reaching its highest level to date in 2013 (525 million gallons), imports of biomass-based diesel fuel, which includes biodiesel and renewable diesel, into the United States (US) fell in 2014 to 333 million gallons. The 36 percent drop was due to uncertainty surrounding future Renewable Fuel Standard (RFS) targets and the elimination of the blender's tax credits. As higher RFS volumes for biomass-based diesel were finalized in 2015 and the tax credits reinstated, US imports of biodiesel and renewable diesel shot up 61 percent last year to a record 538 million gallons, according to the US Energy Information Administration (EIA).

The strongest drivers of the increase in US biomass-based diesel demand since 2012 have been increasing RFS targets and the tax credits, which had lapsed and been reinstated several times. Biodiesel and renewable diesel qualify for the two major renewable fuel programs in the United States: the RFS applied at the national level and the Low Carbon Fuel Standard (LCFS) in California. Biomass-based diesel fuels have additional advantages over other renewable fuels because of their relatively high energy content and low carbon intensity, which allow them to qualify for higher credit values in both renewable fuel programs.

Of the 334 million gallons of biodiesel imported into the United States in 2015, more than half (183 million gallons) was from Argentina. The US Environmental Protection Agency's January 2015 approval of an RFS pathway for Argentine biodiesel volumes established a streamlined process for Argentina's biodiesel producers to generate renewable identification number credits. The remaining volumes of biodiesel imports were sourced primarily from Indonesia and Canada, at 73 million gallons and 61 million gallons, respectively. US renewable diesel imports reached 204 million gallons in 2015, up 69 percent from 2014. All renewable diesel imports last year came from Singapore primarily through West Coast ports, likely destined for California LCFS compliance.

According to EIA data, biodiesel imports fell dramatically from December 2015 to January 2016. In December, imports were more than 45 million gallons, 38 million gallons of which came from Argentina, but in January total imports approached only 9 million gallons, with slightly more than 2 million gallons arriving from Argentina, a nearly 20-fold decrease from the month before. However, in February (the last month data was available as of press time), imports of biodiesel from Argentina shot up more than four times to 9 million gallons of the 12 million total gallons imported that month.

### Brazil Increases Biodiesel Blend

The government of Brazil has approved increasing the country's blend mandate for biodiesel in diesel fuel from seven to eight percent by 2017, with further increases to nine percent by 2018 and 10 percent by 2019. The move should boost the country's commercial agriculture and biodiesel production.

Brazil has required a blend of renewable fuel in its diesel supply since 2008. In 2014, the mandate was increased from five to six percent and raised again from six to seven percent in November 2015. The new law provides for further increasing biodiesel content in diesel fuel to 15 percent beyond 2019 after successful engine testing is completed and the results are approved by the National Energy Policy Council. Soy oil is the primary feedstock for biodiesel production in Brazil.

The Ministry of Mines and Energy estimates the nation produced just over one billion gallons of biodiesel in 2015, up from 898 million gallons the year before.

### Diamond Green Plans Expansion

Diamond Green Diesel is expanding the annual capacity of its Norco, Louisiana, facility from 160 million gallons of renewable diesel to 275 million gallons, an 83 percent increase. The company is a joint venture of Darling Ingredients Inc. and Valero Energy Corporation.

Completion of the upgrade is estimated to be in the fourth quarter of 2017 with production expected to ramp-up in the first quarter of 2018. The company expects to operate at full capacity throughout the expansion phase, excluding an estimated 15 to 30 days of necessary downtime for final tie-ins. The planned expansion will also include increased outbound logistics for servicing the many developing low carbon fuel markets around North America and the globe.

"Our Diamond Green Diesel joint venture continues to be a shining star in our portfolio of ingredients and our team has successfully proven the technology works, producing the highest-quality product to meet the expectations of our customers," commented Randall C. Stuewe, Darling Ingredients Inc. chairman and chief executive officer.

### Iowa Investing More in Biofuels

The Iowa legislature has further committed the state's investment in biofuels by extending several tax credits and securing additional funding for its blender pump program, the Renewable Fuels Infrastructure Program (RFIP).

Senate File 2309, passed almost overwhelmingly by the House of Representatives and with no opposition in the Senate, extends the biodiesel production credit through 2024. It was originally set to expire at the end of 2017. The credit is two cents per gallon on the first 25 million gallons of production per biodiesel plant.

The bill also extends and expands the biodiesel promotion retail tax credit, which will continue to provide petroleum retailers 4.5 cents per gallon on blends of at least five percent biodiesel through 2017. From 2018-2024, the incentive will drop to 3.5 cents per gallon, but an additional tax credit of 5.5 cents per gallon will take effect for blends of 11 percent

biodiesel and higher. The legislation was awaiting Iowa Governor Terry Brandstad's signature at press time.

In addition, both sides of the Iowa legislature voted unanimously to secure another year of funding for the RFIP, which offers cost-share grants to retailers in the state looking to upgrade fueling infrastructure to various ethanol and biodiesel blends. Reimbursement can be up to 70 percent of installation costs, to a maximum of \$50,000 per project, with a five-year commitment to sell the renewable fuel blends. The most recent RFIP board meeting set records by awarding 68 projects a total of \$3.2 million in state grants to upgrade infrastructure to offer higher blends of ethanol and biodiesel. This vote will secure funding for the project through the state's next fiscal year, which ends June 30, 2017.

Iowa has 12 biodiesel facilities with the capacity to produce nearly 315 million gallons annually and 43 ethanol plants capable of producing 4 billion gallons each year.

## Jobe Leaves Biodiesel Board

After nearly 20 years of service to the National Biodiesel Board (NBB), chief executive officer (CEO) Joe Jobe left the organization in early May to pursue other opportunities. Jobe started with NBB in 1997 and was named CEO in 1999. He led the board during a time when biodiesel use in the United States went from 200,000 gallons to over two billion gallons projected in 2016.

"I want to thank the National Biodiesel Board for giving me the opportunity to work in an industry that is helping to change the world," Jobe said. "I love this industry – the hard-working people, the visionary leaders, and the product that

I will continue to use every day. Now is a good time for me to pursue a different path. Biodiesel is positioned to lead the carbon reduction goals of the nation and I can't wait to see what biodiesel does next."

The search for a new CEO at NBB has begun. Donnell Rehagen, chief operating officer, will have daily oversight of the Jefferson City, Missouri, office and Anne Steckel, vice president of federal affairs, will continue to oversee the Washington, DC, office and retain all oversight of federal and regulatory affairs.

## Oregon City Dedicated to Renewable Diesel

After months of testing, tinkering, and evaluating, 40 vehicles in the municipal vehicle fleet in Corvallis, Oregon, will switch over to running entirely on renewable diesel fuel this summer. The move will apply to about one-third of the city's vehicle pool of utility trucks, emergency response vehicles, street sweepers, and transit buses, and is expected to reduce the fleet's greenhouse gas emissions by about 1,000 metric tons of carbon dioxide annually.

The new R-99 renewable diesel fuel (99 percent renewable diesel, one percent petroleum diesel) is made from vegetable oils and animal fats. Previously, the city's vehicles had used a fuel blend containing 50 percent petroleum diesel and 50 percent renewable diesel. Prior to that, the city relied on biodiesel; however, the city's vehicle systems experienced more wear and tear while using biodiesel.

*Continued on page 27*



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## A Growing Population: Chance or Challenge?

The 5th Global Feed and Food Congress was held in Antalya, Turkey, in mid-April. Due to the opening of Expo 2016 in Antalya the same week, the United States State Department issued travel warnings for the city (as well as for Istanbul and the area of the Syrian border). This was probably the reason why many Americans and Asians cancelled their participation in the congress, which was a pity, especially for the latter, as Asia was often identified as the booming continent (besides Africa) that will demand more food in the future. This is not only due to its current high population, but also to an ongoing growth in population and wealth. Fulfilling this demand was seen as a huge challenge; many presenters stressed the magical number of nine billion people globally by 2050. Yet what does this number mean? How does one comprehend nine billion?

Professor Leo den Hartog, Trouw Nutrition, gave a perfect introduction by saying, “When my parents were born, there were one billion people on earth. When I was born, there were already three billion. Now we have seven billion and in 2050, nine billion.” Hartog predicted that the production of meat and dairy must increase by 75 percent and 53 percent, respectively, to meet the demand, which cannot be met by expansion of arable land but by efficiency. He said that on average worldwide productivity of farm animals is 30 to 40 percent below their genetic potential because of suboptimal conditions and health status. Matthijs Mondria from Rabobank used another example: If China used the Dutch feeding regime, 54 million metric tons less of pig feed would be needed, or put in a different perspective, 13 million metric tons more pork meat would be produced with the same amount of feed.

Following his introductory words, Hartog stressed that not only has the world population and its demand grown, there has also been a change of perception and consciousness about food during the last 70 years. From 1945 to 1960, the question was, do we have enough food to feed all the people? This was also the case during the centuries before: food security was priority number one. After 20 years of modernization and rationalization, questions about environment, antibiotics, and animal welfare arose (1980-2000). Due to several food, feed, and the ongoing bovine spongiform encephalopathy crises, food safety was a hot topic for the consumer, followed by the question on food quality. Now, over the last few years, sustainability is a driving force, which means the question has returned of can we feed our children and grandchildren in the future. Dr. Marcos Jank, BRF Asia-Pacific, used the same timeline in his presentation but emphasized that not all countries went through these different stages. Underdeveloped countries still care about food security. China and India are in the modernization phase and Mexico has just now begun looking at environmental issues. The United States, Canada, Australia, New Zealand, most European Union countries, and Japan are in the most modern phase.

Hartog also warned that in 2050 more people will die due to antimicrobial resistance than by cancer, meaning a big



Dr. Martin Alm gives a presentation on rendered proteins.

step back for food safety. The feed industry must focus on that too, especially with regard to feed additives. “The more, the better” is an outdated wisdom and must be transferred to the developing countries as well. This discussion should be closely followed and implications for rendered products need to be identified. Perhaps research in this area is needed.

Further workshops at the congress focused on animal nutrition, markets and trade, global regulations and feed trade facilitation, biosecurity along the food and feed chain, and sharing good manufacturing practices globally. On behalf of the World Renderers Organization (WRO), this author gave a presentation on sustainable aquaculture, stressing that the use of fats and proteins from land animals in aquaculture is not only a nutritional advantage but also has sustainable benefits. This includes many fish species of all kinds, warm and cold, fresh and marine water.

In the final discussion round of the congress, Knut Nesse, Nutreco, concluded that feeding 160 more people per minute is and will be a huge challenge for the world. More people will ask for animal proteins and, due to higher income and the creation of a new middle class, will ask for more than ever before. More demand for meat, milk, eggs, fish, and so on means ongoing growth for feed manufacturing.

How does all this affect the rendering industry? Renderers still play an important role of avoiding food losses by turning animal by-products into valuable commodities. This is what renderers have already been doing for centuries. More need for animal protein means more animals and more animal by-products. Changing eating habits produce even more by-products to process. Following Nesse’s conclusion, it was evident the future will see prosperous times. When the new growth occurs in countries where the WRO is currently not present, there will be a need for knowledge for optimal processing. WRO manuals are already a good start to help renderers worldwide.

Finally, renderers take social responsibility to keep nutrients from animal by-products in the food chain and avoid wasting natural resources. This stresses the importance of the rendering industry’s mission. **R**

The city used about 136,000 gallons of diesel in 2015 and fuel usage is on the rise as bus transit ridership has increased. The cost premium to switch over to renewable diesel averages roughly 12 cents per gallon, though that cost is expected to come down as more communities and organizations drive demand for the renewable fuel.

The switch to R-99 comes after many months of testing and evaluation by fleet supervisor Bob Fenner. He found that in addition to increased power and better mileage, the new fuel also contributed to a 10 percent reduction in fuel system maintenance as the cleaner-burning R-99 resulted in fewer clogged filters and fuel lines.

Renewable diesel has also been embraced by Oregon municipal fleets in nearby Eugene and Portland, and the City of San Francisco, California, has been using R-99 for nearly 2,000 diesel vehicles in its fleet since last summer.

## REG Improving Two Facilities

Renewable Energy Group (REG) Inc. will invest \$7 million at its newly acquired biorefinery in Madison, Wisconsin, to make process improvements, create a dedicated entrance, add biodiesel storage, and install locker rooms for team members. REG purchased the 20-million-gallon-per-year facility earlier this year from Sanimax Energy.

In addition, REG Danville LLC in Illinois recently purchased the tank complex at the adjacent Bunge Milling facility for \$1.5

million. The tanks will be connected to REG Danville's existing infrastructure to increase the facility's storage capacity for feedstock by at least 950,000 gallons and biodiesel by up to 12 million gallons. In July 2015, REG began a separate \$31 million upgrade project at the multi-feedstock 45-million-gallon-per-year biorefinery that will add other logistics enhancements along with biodiesel distillation capabilities. Through this expansion and the purchase of the Bunge tanks, REG Danville now sits on nearly 30 acres. The updated project is scheduled to be completed later this year.

## US EPA Awards Biodiesel Users

The United States (US) Environmental Protection Agency (EPA) recognized two long-time biodiesel users for their commitment to reducing emissions and protecting the environment. The Medford Township Public Schools in New Jersey was presented with the 2016 Environmental Champion Award and Harvard University's Fleet Management Division was honored with the 2016 Environmental Merit Award.

In 1997, Medford was the first school district in the country to use biodiesel and is the nation's longest continuous user of biodiesel in a student transportation fleet. Its biodiesel use has eliminated 123,376 pounds of emissions and 2,408 pounds of diesel particulate matter.

In 2004, Harvard, in Massachusetts, was the first Ivy League school to power its diesel vehicles with biodiesel, which it still uses today. Harvard's biodiesel use in the past year has resulted in a 15 to 20 percent reduction in emissions. **R**



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# Funding Research and a Plan for a New Approach

There are various ways the Fats and Proteins Research Foundation (FPRF) has solicited, funded, and executed research over its 54-year history. Now a new approach to fund pet food research, a “diffuse model,” is being considered that will employ the best attributes from the different ways FPRF has engaged with researchers in the recent past: competitive grants from a pool of applicants from wide distribution of a general request for proposal (RFP), targeted negotiated projects, and a dedicated center with steady funding.

The goal of FPRF-funded research is to advance the science, technology, and utilization of rendered products in the global market, add value, and enhance sustainability of the practices used to convert meat by-products into beneficial commodities. The sustainability of modern meat animal production depends on converting the associated by-products away from waste into valuable uses. To accomplish this in an increasingly complex and crowded world has become difficult and will require the diligent, thoughtful, and coordinated efforts of stakeholders who have an immediate role and those who may not realize their responsibility in the current era. To meet these demands will require vision, financial support, and ingenuity.

## Challenges

The current challenge is that rendered products are not considered “sexy,” not that they ever were. Yet, society often fails to recognize that something has intrinsic value when its full potential or benefit is not fully understood. An example is the very simple and base element that makes modern technology function – silicon, the same sand found at the beach, something most people take for granted as one of the most insignificant compounds on earth. However, in the right hands, this compound has changed the very world upon which we work, play, and even write a document, giving birth to the computer technology explosion. The by-products from the modern meat industry, similarly ignored, contain assimilated minerals, hydrocarbons of more value than the most prized gusher in the panhandle, and DNA base pairs from the most complex communication system ever devised on earth (the genetic code).

In the next decade, proteins will be the most divisive and rare of commodities to the aquaculture, pet, livestock, and poultry feed world. As consumers strive for more elite differentiation on the one end of the spectrum, others will be struggling to find a sufficient supply for subsistence. The rendering industry is truly coming to a crossroads and clever ideas will be in high demand.

FPRF has used several different ways to engage the research community and obtain research projects for the benefit of the rendering industry. These include “at-large” proposals in response to a broad RFP; targeted, negotiated projects from a selected researcher audience; a research center dedicated at a single university; and combinations

of the above. Important areas of research for the rendering industry include food safety, animal nutrition, sustainability, novel technologies, and pet food functionality.

## The At-large Method

FPRF has a long successful history of soliciting research proposals from universities across the United States (US) and Canada that have produced useful research results in animal nutrition, food safety, product quality, and so on. Gradual changes in the land grant university system, along with shifts of resources toward molecular technologies, has reduced the number of scientists familiar with traditional animal science all while federal funding for such research has declined. One result is fewer submissions in response to FPRF’s RFP as well as receiving proposals in areas far from FPRF’s scope of research or with little recognition of the rendering industry’s realities. This means FPRF must become more aggressive at seeking out scientists who can accomplish cutting-edge rendering research and FPRF members must become more engaged with these scientists to articulate specific needs and problems in rendering to steer the funded research. In some areas, more may be needed than the traditional at-large RFP that depends on researchers to understand the rendering industry.

## The Center Method

About 11 years ago, FPRF partnered with Clemson University to create the Animal Co-Products Research and Education Center (ACREC) to meet changing research needs with the centered approach. ACREC gives FPRF the ability to focus research and provide sustainable funding in areas of inquiry important to renderers while developing a cadre of researchers familiar with rendering. This endeavor has produced useful research results in food safety, product quality, new uses, and new technologies. Yet this effort has not evolved the breadth to address all research areas important to rendering today.

Clemson lacks a significant infrastructure or number of faculty that understand the industry enough to bring well-designed projects to bear on the entire range of rendering projects needed. The funding of ACREC has not been at a high enough level to build infrastructure such as a pilot rendering plant. Once researchers engage with the rendering industry, the level of understanding rises considerably, but this knowledge has not always transferred to other researchers not in the discussions – researchers cycle through the meetings with renderers one at a time. Clemson has done a good job in novel technologies, but that field is the most difficult to effectively transfer new developments to market, though FPRF and Clemson are working to solve that problem.

## The Method of Targeted, Negotiated Projects

This method has been used in areas where the rendering industry has well-defined needs, and care was taken to

explain these needs in detail to researchers in the design of experiments. A benefit of de-coupling from the typical graduate student project cycle is greater speed, but using student labor keeps costs down. Sometimes, the urgent need for results to meet regulatory or other pressures makes the added cost worthwhile. Research described below in food safety and sustainability show how targeted, negotiated projects can work well.

### Food Safety

The safety and reputation of rendered products for animal feed and pet food is the most important pillar on which the industry stands. Increasing regulation and customer scrutiny will require continued work in this area. Such work must be connected with regulatory and market needs, and not be unnecessarily duplicative of work from human food science.

A negotiated research project at ACREC proving that rendering temperatures kill the avian influenza virus helped preserve export markets worth millions of dollars with a peer reviewed journal article in 2012. The most recent efforts in food safety research have been targeted, negotiated projects from a selected researcher audience. Driven by regulatory pressure, FPRF members and staff were able to give researchers focused direction and the quality interactions yielded usable results from an efficient process. Examples are the recent thermal validation studies done at Colorado State University, Texas A&M University, and Texas Tech University chosen for their expertise in meat industry food safety. The results should yield tangible member benefits to comply with regulatory needs for process validation. A follow-up study at Colorado

State to explore the problem of *Salmonella* contamination of rendered fat products in pet food, designed with help from pet food industry scientists, has attracted a partnership in research funding from the pet food industry.

Current targeted efforts in the food safety area are effective and can continue productively, but success depends on FPRF member involvement and interactions with researchers to ensure research needs are well defined and projects are sufficiently focused to meet those needs. The primary goal of this field of research is published scientific data that can be used to advance the knowledge of rendering processes.

### Animal Nutrition

Research into rendered products as feed ingredients for livestock and aquaculture has long been the foundation for increased sales and the most long-running theme in FPRF research. Information on digestibility, nutrient density, use in diets, etc. continually evolves, as does competing ingredients, environments, and the genetics of the animals. This is why nutrition research must continue, even if it seems repetitive to the casual observer.

This field has been served well by the open competitive system offered by at-large proposals in response to FPRF's broad RFP. Examples of success are extensive scientific publications by Hans Stein at the University of Illinois, Dominique Bureau of the University of Guelph-Canada, Jesse Trushenski of Southern Illinois University, and Brian Kerr at the US Department of Agriculture who was also able to make sure

*Continued on page 30*

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329

**NOVUS**

the National Research Council publication on swine nutrition contained the latest composition and digestibility data on rendered products.

Current targeted efforts in the animal nutrition area are effective and can continue, but success will depend on enough funding to keep researchers interested. The primary goal of this field of research is published scientific data that can be used to advance the knowledge of rendered products.

#### *Sustainability*

This is a very important venture essential to the future of rendering. The industry's sustainability advantage figures importantly throughout the National Renderers Association's (NRA's) new strategic plan to establish economic, social, and environmental sustainability metrics that maintain and enhance their members' social license to operate. FPRF funded four very important projects at ACREC that are the foundation to begin this effort – a life cycle analysis of producing biodiesel from rendered lipids, a rendering carbon footprint model, a life cycle assessment for rendering operations, and a recent comparison of three alternatives for large-scale processing of animal carcasses and meat by-products.

Clemson's Dr. Charles Gooding (now retired) responded to industry inquiries and engaged in an interactive process with FPRF members to develop a research strategy that resulted in the very useful carbon footprint calculator for rendering. A follow-up project life cycle analysis and a white paper summarizing comparative environmental impacts of alternatives to rendering have been very useful for the rendering industry. With the industry's new interest in exploiting "the original recyclers" natural advantages in sustainability and with the work of NRA's new Sustainability Committee, future efforts may have needs beyond ACREC resources. FPRF may need to look to additional universities for future work while recognizing excellent past work by ACREC.

The primary goal of this field of research is published scientific data that can be used to increase the recognition of rendering as essential to the sustainability of the food system and knowledge that will help rendering plants improve their own sustainability.

#### *Novel Technologies*

Non-feed uses for rendered products continue to be an important back-up plan and application of new technologies to rendering can improve efficiencies in the future. ACREC's ability to introduce unfamiliar scientists to the industry's research needs has resulted in many exciting new applications. The development of novel technologies to improve the processes and products of rendering has been a genuine success of ACREC. Examples would be a natural antioxidant derived from animal blood, nanotechnology to fight odors, ultrafiltration to clean wastewater, and techniques to increase fat extraction. Several other projects now underway show great potential. This dedicated center at a single campus has yielded multidisciplinary approaches particularly well suited to developing novel technologies.

Drawbacks of the center method include a "silo effect," meaning that the productive interactions among industry

members and researchers are happening at that single university, even with single researchers, in the way the program has been administered. While this can be a great benefit to that researcher and ACREC, it would be productive to leverage the education and interaction provided by renderers to a broader research audience.

Another drawback not necessarily of the center but of the nature of work in novel technologies is that very often this research results in patented processes, special knowledge that should be protected, or other intellectual property considerations that complicate publication, publicity, and communications as well as bringing inventions to market. FPRF and ACREC are working hard to find a solution to this problem but most researchers are not responsible for or interested in developing a start-up business to market inventions. In addition, established marketers and companies are reluctant to pay for inventions only proven in a lab. One notable exception has been the antioxidant developed by Drs. Vladimir Reukov and Alexey Vertegel who have a start-up company and have attracted significant outside capital to take the invention to market. Some other projects are near or at the patent stage, or on the shelf awaiting markets with no clear plan to get there.

#### **Pet Food Functionality – an Opportunity for a New Approach**

The goal of this proposal is to improve efforts from the status quo and start to shift thinking to methods that focus broad resources to critical areas. The same method cannot be used to address every problem and get the best results. Just because a hammer worked in the past does not mean that all rendering issues in the future will be nails. New approaches, new attempts, new directions, and simultaneous efforts will move the rendering industry quicker to meet the most trying issues of its time in the immediate (e.g., food safety and sustainability), and longer term (i.e., protein shortages). Following are an evaluation of current methods and a few ideas to explore a new approach.

While the areas of food safety and animal nutrition are very important to the use of rendered products in pet food, the area of pet food functionality deserves its own research emphasis area because of the fast-growing pet food market and value-added opportunities for rendered products. This is a high-value category that can introduce rendering to the world in an important emotional manner. So far, the industry has failed to connect with the pet food customer in this category. In the campaign to win the hearts and minds of pet owners, renderers are losing badly. How often is the phrase "no by-products" heard in pet food advertising? Yet, that presents an opportunity to share news of what values rendered products supply to the typical and even exceptional pet.

Further, areas must be explored that include topics like control of oxidation, extending shelf life, new ingredients extracted from by-products, new consumer-friendly ingredient definitions, ingredients with health benefits, among many others. These are important areas for the future of the use of rendered products in pet food. Plus, selected food safety and nutrition projects specific to pet food could also originate from this area. Such a program could benefit the rendering industry by bringing rendering, pet food, and scientific interests



together to solve problems in pet food manufacturing and foster innovation and create value.

### New Proposal for Pet Food Research: A Diffuse Model

The concept being proposed is to allow one university to function in a spoke-and-wheel model to help coordinate and collaborate with other researchers on topics germane to pet food, ingredients, and shelf-life issues important to the rendering industry. They would do so in a manner that brings a cross-section of researchers to the table for exchanging of ideas, conducts multi-site research projects that leverage the best of each group's capabilities, and engages rendering industry partners to bring about the most cutting-edge ideas and information. Engaging several universities rather than just one, along with increased pet food industry and rendering participation, would yield even better results.

While several universities would be interested in developing a pet food center with steady funding from FPRF, there are some drawbacks to the center concept (as described above) that would indicate a more open method may be beneficial. The hosting university should have the demonstrated ability to host workshops, strategy meetings, and multi-industry partnerships in research while FPRF would also include top pet food researchers from other universities with pet food programs in Kansas, Illinois, Wisconsin, Iowa, and any others that are interested. The program should be beneficial to all parties and open to researchers nationwide. Training students to use rendered products in pet food and exposing wider industry audiences via workshops would benefit rendering long term.

Current and past efforts in the pet food functionality area have been similar to at-large proposals in response to a broad RFP and would be improved by a more interactive program with involvement from FPRF members as well as pet food companies. Drawing lessons from the successful interactions at ACREC, a collective problem-solving program could replace the current classic RFP model for this area of research. The notion is that as a group of scientists is presented with a problem, they will rally to the challenge and create unprecedented solutions. This could be a much more effective model than flailing away hoping to guess what the potential sponsors might find intriguing.

Success of such a new approach for pet food research will depend on continued funding and support. The university base for this program should have a faculty familiar with and supportive of the rendering industry. The primary goal of this field of research is published scientific data that can increase the use of rendered products in pet food, but it is conceivable that patented processes could also be a result of work there. Patents and ownership of intellectual property rights add a level of complexity to research funding and challenges in bringing inventions to market that neither universities nor FPRF have yet solved.

A number of past projects funded by FPRF have been attractive for co-funding from partners such as the Poultry Protein and Fat Council. That interest is expected to continue and there will be discussions with the Pet Food Institute about doing additional partnership research. Well-designed

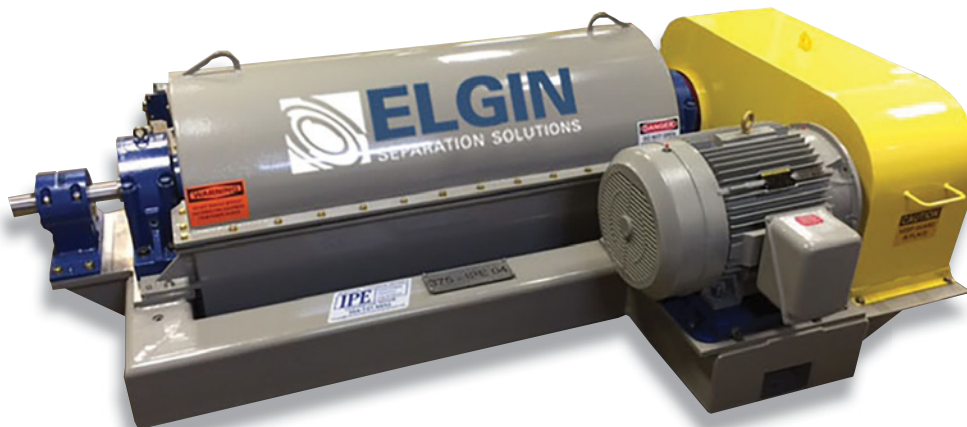
*Continued on page 35*



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## Moving New Technologies to Market

In early April, a roundtable discussion on the subject of moving new technologies to market was held in conjunction with the Clemson University Animal Co-Products Research and Education Center (ACREC) spring meeting. The purpose of the roundtable was to identify necessary next steps to move ACREC technologies to the marketplace for the benefit of the rendering industry.

Vincie Albritton, deputy director of the Clemson University Research Foundation (CURF), described to the group how successful research-to-technology commercialization is typically a long process with many licensed technologies only realizing truly significant royalty returns after 10 or more years post-research and filing of patent applications. Each invention moves at a different pace depending on complexity, ability to obtain proof of concept on the laboratory scale, need for further development and/or scale-up for commercialization, patenting, marketing, licensure, and so on. Therefore, each invention must be examined on a case-by-case basis to determine the best way to successfully move the technology into the marketplace.

Chris Gesswein, CURF director of licensing for technology transfer and a molecular biologist raised on a dairy farm in Maryland, is familiar with the rendering industry and the work of ACREC scientists to create new technologies, products, and opportunities for renderers. He explained that technologies often come to CURF early in the conceptual phase. Because the patent process can be protracted and very expensive, CURF conducts a thorough evaluation for market potential before deciding to invest time and money into patenting. A large part of this evaluation is identifying an initial marketing plan. Traditionally, university tech transfer offices have operated in a mode known as a “technology push” wherein after disclosure of the technology, opportunities are sought for that technology in the marketplace. However, at Clemson University, the tech transfer office is pivoting this concept so that instead of having an invention looking for an application, they have a technology pool of applications/needs that new inventions can fulfill.

To accomplish this, Clemson must often further develop the technology to make it more readily viable for the marketplace and to fulfill technology needs. The CURF Maturation Fund was created to provide gap monies to advance technologies to license. Using proceeds from the sale of CURF real estate and retained royalties from Clemson’s Tech Transfer Endowment, this funding is used as pre-seed “investment” in technologies that are owned by the university. The purpose of this support is to mature the technology to the point where an industry transaction can occur. Such a transaction may be a license agreement, an option to an existing or start-up company, or an award of a small business innovation research grant from a federal agency. The CURF monies can also be used to perform a defined activity (in a limited scope) such as prototyping, field testing, generation of data and samples, or other needs to further the technology to the point it is viable



Photo by Dr. Jack Davis

Dr. and Mrs. Gary Pearl and the Clemson University tiger mascot at the ACREC dedication conference reception in March 2006 (see story on page 34).

for licensing. In 2015, CURF chose five out of 14 proposals for total funding of \$143,000 and in 2016, four of 11 proposals have been supported at \$288,000. In the past two years, two of the technologies receiving contributions from the CURF Maturation Fund are ACREC projects.

The first ACREC venture funded was the natural antioxidant project of Drs. Alexey Vertegel and Vladimir Reukov, who conducted the initial research leading to the discovery of an antioxidant they named Prot-X. Upon expressing a desire to form a start-up company, Fats and Proteins Research Foundation personnel recommended they work with Dr. David Meisinger, former executive director, United States Pork Center of Excellence. The trio subsequently formed the start-up company VRM Labs. Financial support from the CURF Maturation Fund provided access to pilot plant equipment at Iowa State University as well as successful scale-up and technology maturity that has attracted an investor to the project. Funding also allowed generation of production data for an Association of American Feed Control Officials regulatory submission and completion of mandatory viral load safety testing.

A CURF Maturation Fund grant also went to ACREC researchers Drs. Daniel Whitehead and Frank Alexis for their odor destroying, biodegradable nanoparticles. The CURF contribution allowed purchase of equipment for pilot-scale feasibility and cost modeling as well as production of kilogram quantities of the nanoparticles. This CURF-funded work has allowed collaboration with an advanced materials company in Anderson, South Carolina, and is strengthening the case for licensure and commercialization of the technology.

The critical needs for industrial process scale-up during technology progression were explained to roundtable participants by senior process engineer John M. Harden. He listed the typical stages of industrial process advancement as concept development, laboratory scale, pilot scale, semi-works

scale, and full scale. Harden reported that with each increase in scale, valuable and critical information is learned. He explained that concept development involves identification of a potential solution to a problem, identification of a potential resource, recognition of a new approach to an existing process, and/or response to changing economic or regulatory conditions.

On a laboratory scale, processes are typically limited to about 1.3 gallons or less and are most commonly conducted in glassware, in batch operations, and with external containment such as a chemical hood or an enclosure. Laboratory scale allows for maximum flexibility for process modifications, fast response to changing conditions, and relatively simple regulatory compliance. Moving up to pilot operations typically involves 10 to 1,000 gallons and a change in construction materials. Whereas laboratory scale uses glassware, manual transfers, stirring bars, and heating mantles, pilot plant operations require metal pressure vessels, jacketed vessels, agitators, metal tubing, compression fittings, pumps, and valves.

Typically, laboratory scale processes are conducted at atmospheric pressure, reagents are chosen for effectiveness, external containment is used, and regulatory compliance is simple. However, on the pilot scale, containers are pressurized, reagents are chosen for regulatory compliance, venting and closed containment are required, and complex government demands are necessary. In most cases, laboratory operations are conducted in batch systems with manual control, the systems allow fast response, mistakes can simply be a nuisance, and the procedures are relatively inexpensive. Pilot plant operations are most commonly continuous systems, computer-controlled, delayed response, and mistakes can be catastrophic. The pilot plant is also more expensive to build and operate than laboratory scale due to larger equipment and more robust construction requirements, regulatory compliance, and personnel.

Harden pointed out that although a pilot plant requires an investment in time and money, it can uncover problem areas that often are not experienced on a laboratory scale. Pilot plant operations generate essential design data for full-scale systems, allow training of operators

and also provide fine-tuning of the process. Harden has more than 30 years of experience as a process engineer at both Clemson University and in industry. He relayed a story where a company, over the objections of the process engineers, chose to skip the \$1 million pilot plant and instead built a \$19 to \$20 million full-scale facility. Unfortunately, an irreversible process design problem with the technology not evident on the laboratory scale was found upon completion of the full-scale plant. This flaw could have been identified if a

pilot facility had been included during scale-up. Harden emphasized that it is critically important to sequentially scale-up operations during the evaluation of technologies for feasibility and subsequent commercialization.

Dr. Greg Pickett, senior associate dean of the Clemson University College of Business and Behavioral Science and director of the master of business administration (MBA) program, discussed ways to move ideas to market

*Continued on page 34*

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and the entrepreneurial ecosystem at Clemson University that helps support technology development. A number of mechanisms are in place at Clemson, including the Arthur M. Spiro Entrepreneurial Leadership Institute that guides educational efforts reaching freshman to graduate-level students. Pickett previously served as the director of the institute, which works with faculty, staff, and students to ignite their passions and help them create

new businesses. In addition, a student living-learning community has been created that invites students from all over campus to interact with leaders in entrepreneurial enterprises. At Clemson, there are strong resources for business development and to assist with new innovation launches through the technology transfer division of CURF as well as the MBA program and the Spiro Entrepreneurial Leadership Institute. Pickett described how these units of the university serve as a connection to assist entrepreneurs move inventions

to technology incubators that allow further development. They are a source of information that might include market assessments through some MBA classes. Other mechanisms, such as a new technology village program under consideration, could serve as structured resources for information.

Dr. Chad Navis, the Arthur M. Spiro endowed professor of entrepreneurial leadership at Clemson, spoke about the opportunities for involving students in entrepreneurial enterprises. There are three challenges concerning the entrepreneurial atmosphere related to university and technology development. The first is the culture of the university and interaction with industry. The second is the proof of concept as well as industry readiness of the technology. The third is the curriculum and ability to involve students in the business aspects of technology development. Navis recently joined Clemson University to fill the endowed professorship and sees great opportunities for engaging students in technological growth and commercialization.

Technology development can be a very slow process from concept to research, patent protection, subsequent licensing, and finally moving into the marketplace. However, the rewards of successful technology to solve problems as well as reap royalty revenue can be great. For instance, one of Clemson's greatest technology development successes was the "Clemson hip" associated with United States Patent #4491987A by Joon B. Park. The university contribution to hip replacement technology has not only helped millions of patients worldwide live better lives, but the license has generated \$29 million in gross royalty revenue over the lifetime of the patent.

Success from good ideas can occur but it takes time to develop the concept to full fruition through basic research, proper scale-up to pilot plant to ensure commercial feasibility, legal protection through patents, marketing the technology to the right partners, licensing, and finally commercial production. Technologies developed at ACREC are being put into this pipeline for the rendering industry. The recent roundtable identified possible university partners who can help guide these new ACREC technologies to success. **R**

## ACREC Marks Tenth Anniversary

In March 2016, the Clemson University Animal Co-Products Research and Education Center (ACREC) marked its tenth anniversary. Although the center's first research projects had been initiated approximately three years earlier, the official paperwork establishing the partnership between the Fats and Proteins Research Foundation (FPRF) and Clemson University was signed on March 27, 2006, during a dedication conference held on the university campus.

To date, 113 ACREC research projects have been awarded on subjects including odor remediation, chemical-free wastewater treatment, and new product development of improved antioxidants as well as plastics from rendered proteins for use in automotive applications. Underway are several technology projects such as improved extraction of fats from meals and converting rendered animal fats to omega-3 fatty acids as a potential replacement for fish oil. Development of a method to reduce polyethylene plastics in rendered fats through renderable bags and gloves has been accomplished and a project on feed ingredient safety related to *Salmonella* reduction using bacteriophages is nearing completion. Other projects have included carbon footprint and energy life cycle analyses, and projects on improved biodiesel. Inventions from current research projects are moving toward larger-scale development with the goal of advancing the technologies into the marketplace for the benefit of the rendering industry.

In the fall of 2002, Dr. Gary Pearl, then FPRF president and technical director, first approached Clemson University with the idea of a research center dedicated to animal by-products. A few months later, a discussion forum was held to explore the concept. The room was packed with curious researchers. From this initial contact, a very successful partnership was formed between FPRF and Clemson University. Today, university faculty, staff, and students are very aware and knowledgeable about the rendering industry and its needs and are applying their expertise to finding new solutions for the industry. **R**

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FPRF Continued from page 31

projects in pet food could also attract new FPRF members and co-funding opportunities. Universities will compete for this program as it would enhance their reputation and help attract competitive federal research funds and money from other sources. This has started to occur with regularity at ACREC.

### Ingredients for Better Research

If FPRF can engage more scientists directly in the process of designing and executing project proposals and experiments, more productive research should result. Renderers directly engaged in articulating rendering problems and needs in discussions with researchers should result in more accurately defined research targets. Tighter, more specific RFPs would save time and effort on both the granting and grant-seeking sides. Engaging more scientists in critical reviews of projects before funding would help FPRF avoid reinventing the wheel or poor research design.

### Keeping Researchers Interested

The main interest from researchers is funding to keep their labs operating and graduate students productively engaged. Most agricultural programs have seen federal funding and state support shrink. Other incentives to engage researchers and convince their administrators that working with FPRF is productive could be employed at low cost. The FPRF Innovation Award (now named the Dr. Fred Bisplinghoff FPRF Innovation Award) established last year could be a more prestigious award with wider recognition. Workshops or rendering-themed scientific symposia with published proceedings could offer an additional publication opportunity for researchers. Travel and speaking stipends could help engage scientists who have knowledge useful for the rendering industry.

### How to Increase Funding

The most recent FPRF strategic plan identified better communication of FPRF successes as a key element and continued progress is planned there. In addition to wider exposure of research successes, many potential funders have noted a preference for funding specific projects of interest rather than unspecified broad

support of FPRF. The development of more focused, targeted proposals that partners would be interested in co-funding could increase the research budget of FPRF. More member involvement could yield higher interest and more commitment of both time and money. New and prospective member awareness and direct interaction will increase the opportunities to connect and expand membership. It is a secondary goal of this diffuse approach to build awareness among prospective members and to engage more members

in the high-value future that rendered products represent.

The FPRF Board of Directors will seek proposals from universities to facilitate and coordinate a spoke-and-wheel model including the best aspects of a center approach and the best aspects of targeted research while being open to projects from additional universities on topics germane to pet food, ingredients, and shelf-life issues important to the rendering industry. FPRF will seek such proposals immediately and start evaluating them in August 2016. **R**

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# Environmental Regulatory Beat Goes On

*Editor's note – Robert T. Vogler is director of environmental affairs for Valley Proteins Inc. and chairman of the National Renderers Association's Environmental Committee. He holds a juris doctor degree from Duquesne University and bachelor of science degree in agricultural engineering and agricultural science from Rutgers University.*

The United States (US) Environmental Protection Agency (EPA) continues to move forward to expand its regulatory reach by asserting jurisdiction or laying the groundwork for expanding its jurisdiction into areas beyond the bounds of federal regulation. In selected cases, courts of law are beginning to show some skepticism and pushback, while in others the courts have deferred and allowed EPA's efforts to prevail. This article will examine the status of certain EPA initiatives of most importance to the rendering industry.

## Clean Power Plan

On October 23, 2015, EPA issued its Clean Power Plan that requires states to cut carbon emissions from power generation by 32 percent from 2005 levels by 2030. States must submit plans as early as September 2016 to comply. Although the first deadline for power plants to reduce their emissions was set for 2022, states and power generators must begin planning and implementing changes quickly in order to meet this year's deadline.

The effect of this plan is said to be a transformation of the nation's electricity system, leading to the closing of hundreds of coal-fired power plants and major bankruptcies in the coal industry, which has called the Clean Power Plan "a targeted attack on the coal industry."

A suit has been filed by 29 states to stop the implementation of the plan. These states have called it "the most far-reaching and burdensome rule the EPA has forced upon the states" that usurps the longstanding role of the states in regulating their power systems and allows EPA to become the central planning czar for power generation and consumption.

On February 9, 2016, the US Supreme Court took an unprecedented move and issued a stay on implementation of the plan pending judicial review. Many commentators have said the strategy by President Barack Obama's administration was to force the plan into effect before the courts had a chance to rule on its legality thus assuring the intent of the regulation is effectuated even if it is ultimately overturned by the courts. The action by the court in imposing a preemptory stay appears to recognize this.

At this point, the regulation is essentially stopped cold until the courts have a chance to determine its legality. Individual states will determine whether to continue taking steps toward compliance pending the court challenge. If the plan is ultimately implemented, the end result would be higher electricity prices and less reliability for the United States electric grid.

## Ozone Standard

On October 1, 2015, EPA adopted a new National Ambient Air Quality Standard for ground-level ozone, lowering the standard from the current 75 parts per billion (ppb) to 70 ppb. The new standard will bring a large portion of the expanding, robust economic areas of the country into non-attainment. A non-attainment designation makes the expansion of industry in that area nearly impossible and existing permits could be re-opened to require further reductions at existing facilities. The effect of the new standard is to further restrict emissions of nitrous oxides and volatile organic compounds as they are precursors to ozone. Rendering plants produce ozone precursors. Exposure to ground-level ozone, or smog, is said to exacerbate respiratory problems, such as lung disease and asthma. This regulation is said to be the most expensive in US history, costing tens of billions of dollars per year even by EPA's own estimates.

Ozone-forming emissions have been cut in half since 1980, leading to a 33 percent drop in ozone concentrations, according to a report by the National Association of Manufacturers. It should be noted that the prior standard adopted in 2008 had not yet been fully implemented, so this is a further reduction in the standard before the environmental benefits of the prior standard were fully realized.

On December 23, 2015, a coalition of national business groups including the US Chamber of Commerce and National Association of Manufacturers filed a petition in the US Court of Appeals for the District of Columbia Circuit challenging the standard. This suit remains pending.

In March 2016, the Ozone Standards Implementation Act of 2016 was introduced in the House of Representatives (HR). This bill (HR 4775) would extend implementation deadlines, including non-attainment designations, to 2025 and reduce the frequency of periodic review of the standard from five to 10 years.

## Paris Climate Accord

On December 12, 2015, a climate accord was reached in Paris, France. The new accord replaces the Kyoto Protocol under which Europe had adopted unilateral and costly decarbonization policies while other large emitters remained outside of any legally binding commitment. This caused Europe's industrial base to lose out to international competition, essentially exporting economic opportunity and emissions outside the European Union.

In contrast, the Paris accord consists of an agreement to submit aspirational plans for addressing climate change that do not bind any members to enforceable reductions in carbon emissions. Instead, there are voluntary pledges of intentions determined and monitored by individual governments in line with their national interests. While Obama has pledged carbon reductions in the United States of 25 to 28 percent by 2025, Europe has backed away from unilateral binding policies and

China used the talks to garner credit for what it was planning to do anyway as it shifts to a less energy-intensive economy and replaces coal with cleaner fuels to reduce smog.

### Waters of the US

On May 27, 2015, EPA finalized a rule revising the definition of “waters of the US,” greatly expanding EPA’s jurisdiction over activities in wetlands, intermittent streams, drainage ditches, and upland areas. This was supposed to clarify the scope of federal jurisdiction over upland and isolated waterways but is widely seen as a huge power grab by EPA and the US Army Corps of Engineers. It is important to note that states already regulate these non-federal waters or have determined there is no need to regulate because of no impact on water quality.

Lawsuits have been filed by manufacturing and agriculture groups as well as most of the states challenging the rule as being beyond the statutory authority of EPA. In October 2015, the US District Court for the Sixth Circuit issued a nationwide stay from EPA enforcement of the new regulation and on February 22, 2016, ruled that the Sixth Circuit has jurisdiction to hear the case directly, bypassing the lower federal courts. It is likely this case will reach the Supreme Court on the initial question as to which court has jurisdiction to hear the case.

In March 2016, EPA issued a report completed jointly with the US Geological Service (USGS) studying the effect of stream flow changes on climate change and other environmental conditions. The report includes discussion of the effect of flow changes on surface waters as well as the interconnectivity of groundwater to surface waters. Critics view this as a step toward EPA asserting jurisdiction on water withdrawal and other flow allocation issues.

There is concern that EPA will use studies such as this to attempt to extend jurisdiction in two ways. First is an effort to regulate activities that affect surface water flows, essentially regulating flow as a “pollutant.” In 2013, EPA lost a challenge by the Virginia Department of Transportation and Fairfax County, Virginia, in the US District Court for the Eastern District of Virginia in a decision involving the Accotink Creek watershed in which EPA sought to regulate stormwater based on flow as a surrogate for sediment. In that case, the court held that flow was not a pollutant and EPA had no basis to regulate flow. This new joint study with USGS could be an attempt

*Continued on page 38*

## Renderers Reduce GHGs

“Since 2009, United States Department of Agriculture [USDA] conservation programs have helped American producers install practices that have reduced net greenhouse gas emissions by over 416 million metric tons of carbon dioxide equivalent, or approximately 60 million metric tons per year – the equivalent of taking 12.6 million cars off the road for a year,” Agriculture Secretary Tom Vilsack declared on Earth Day 2016 following his signing of the Paris Climate Agreement.

By comparison, the North American rendering industry collects and recycles enough organic material to reduce greenhouse gases (GHGs) by nearly the same amount as ag producers collectively, or the equivalent of removing 12.2 million cars off the road each year, according to the National Renderers Association. **R**

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to do an end-run around the Accotink Creek court decision. The result would be unbridled federal jurisdiction over land development, water withdrawals, grading, impoundments, diversions, highways, and so on.

The second would be regulation over groundwater withdrawal and allocation as well as other activities that could potentially affect groundwater quality such as spray irrigation, wastewater ponds, and agricultural practices.



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### Information Collection Request

EPA has made a request to the Office of Management and Budget to allow EPA to collect and use information developed through "citizen science and crowdsourcing techniques." This is data gathered by amateurs, advocacy groups, and other laypeople. It is unknown why this material is needed in light of the abundant sources of information available, how the agency plans to use this data, and what justification there is to use it in regulatory decision-making.

### Chesapeake Bay Blueprint

On February 29, 2016, the US Supreme Court turned down a request by the American Farm Bureau Federation to hear its challenge of EPA's Chesapeake Bay Blueprint, the plan for regulating the watersheds in Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia, and the District of Columbia that contribute phosphorous, nitrogen, and sediment to the Chesapeake Bay. As a result of the denial, the July 2015 ruling by the US Third Circuit Court of Appeals stands, which upheld EPA's process for establishing and implementing total maximum daily loads (TMDLs) for the

Chesapeake Bay. A TMDL is a tool used for achieving water quality standards. Under a TMDL for a given waterway, a limit is set on the maximum levels of pollutants allowed in that waterway and allocations are made to potential sources of the pollutants affecting the waterway.

It is expected that this blueprint will become the standard for other watersheds with impaired waters, including the Mississippi watershed. A similar approach is being taken by EPA to set nitrogen and phosphorous limits in the Malibu Creek watershed in California.

### Endangered Species

On February 11, 2016, the US Fish and Wildlife Service's rulemaking on critical habitat became final expanding critical habitat designations to include areas in which a species no longer lives and areas where a listed species may live in the future. As more species are listed under the Endangered Species Act and as the definition of critical habitat is broadened to include areas where the species no longer lives or may live in the future, it becomes much more likely that any development project could be affected by federal or state concerns. R

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## June

### **National Renderers Association Central Region Meeting**

June 8-10, Greenlake, WI  
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### **World Pork Expo**

June 8-10, Des Moines, IA  
[www.worldpork.org](http://www.worldpork.org)

### **American Meat Science Association 69th Reciprocal Meat Conference**

June 19-20, San Angelo, TX  
[www.meatscience.org](http://www.meatscience.org)

## July

### **Association of American Feed Control Officials Annual Meeting**

July 31-August 1, Pittsburgh, PA  
[www.aafco.org](http://www.aafco.org)

## August

### **Inaugural Canadian Beef Industry Conference**

August 9-11, Calgary, Alberta, Canada  
[www.canadianbeefindustryconference.com](http://www.canadianbeefindustryconference.com)

### **Waste Conversion Technology Conference and Trade Show**

August 15-17, San Diego, CA  
[www.wasteconversionconference.com](http://www.wasteconversionconference.com)

## September

### **Global Outlook on Aquaculture Leadership (GOAL)**

September 19-22, Guangzhou, China • [www.gaalliance.org/goal](http://www.gaalliance.org/goal)

### **9th Annual National Aboveground Storage Tank Conference and Trade Show**

September 28-29, Galveston, TX • [www.nistm.org](http://www.nistm.org)

## October

### **Poultry Protein and Fat Seminar**

October 6-7, Nashville, TN • [www.uspoultry.org](http://www.uspoultry.org)

### **2016 Feed/Pet Food Joint Conference**

October 10-12, Des Moines, IA • [www.ngfa.org](http://www.ngfa.org)

### **American Fats and Oils Association Annual Meeting**

October 12-13, Chicago, IL • [www.fatsandoils.org](http://www.fatsandoils.org)

### **National Renderers Association 83rd Annual Convention**

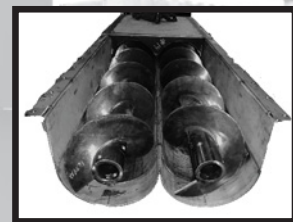
October 17-21, Amelia Island, FL • [www.nationalrenderers.org](http://www.nationalrenderers.org)

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# A House of Cards: Securing Storage Racks

*Editor's note – Mark A. Lies II is a partner in the Environmental, Safety, and Toxic Tort Group in the Chicago, Illinois, law firm of Seyfarth Shaw LLP. He specializes in product liability, occupational safety and health, workplace violence, construction litigation, and related employment litigation.*

*Adam R. Young is an associate attorney in the Environmental, Safety, and Toxic Tort Group of Seyfarth Shaw. He focuses his practice in the areas of occupational safety and health, employment law, and associated commercial litigation. Legal topics provide general information, not specific legal advice. Individual circumstances may limit or modify this information.*

Employers across most industries regularly use industrial steel storage racks to stow materials in the workplace. Unfortunately, accidents frequently occur resulting in the collapse of these storage racks and serious injuries to employees. Collapses can further result in losses of stored materials, damage to industrial trucks and real property, and business interruptions. The Occupational Safety and Health Administration (OSHA) requires employers to ensure industrial steel storage racks in warehouses, distribution centers, and offices are blocked, interlocked, and otherwise secured against sliding and collapse. Accordingly, employers should select and install rack systems that are compliant with the relevant industry standards. Employers should periodically inspect rack systems and utilize a qualified engineer to approve any repairs or modifications. All installations, repairs, and modifications should be completed by a qualified installer.

## Laws and Regulations

OSHA has issued very general regulations regarding the use of industrial shelving in the workplace. Under OSHA's General Industry regulation (29 Code of Federal Regulations 1910.176(b)), "...storage of material shall not create a hazard. Bags, containers, bundles, etc., stored in tiers shall be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse." The regulation requires employers to store materials on industrial storage racks in such a manner to prevent sliding, falling, and collapse. This regulation must be considered in conjunction with OSHA's General Duty Clause, which requires that an employer "furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees." (29 United States Code 654(a)(1)). The General Duty Clause provides a catch-all provision under which the agency can cite an employer for failure to correct a "recognized" hazard.

There is no OSHA Standard Interpretation that offers guidance with regard to the construction, installation, maintenance, and repair of steel storage racks. While the codes and recommendations produced by private industry

associations are not law, OSHA frequently relies on them as "guidance from their originating organizations related to worker protection" for generally recognized safety practices. For example, OSHA regularly defers to American National Standards Institute (ANSI) standards, which the agency calls "industry consensus standards," as evidence that a hazard is recognized. Accordingly, OSHA generally will take the position that an employer must comply with ANSI and industry standards to protect employees from recognized hazards, or face possible inspections and costly citations.

ANSI Standard MH16.1 (2012), published by the Rack Manufacturers Institute (RMI), is the *Specification for the Design, Testing, and Utilization of Industrial Steel Storage Racks*. The ANSI specification includes design and material specifications as well as communication requirements with regard to maximum loads. For example, the specification requires that columns must be furnished with base plates and anchored to the floor. Where mandated by local law, racks must be built to withstand earthquake effects.

## Further Considerations for Industrial Storage Racks

RMI provides further industry guidance in its *Considerations for the Planning and Use of Industrial Steel Storage Racks* (2012). This guidance document recommends that employers who do not possess the necessary in-house expertise on industrial storage racks hire a material handling specialist to determine the specification requirements and storage rack layout for their building. When purchasing storage racks, the guidance suggests employers use purchase orders that mandate racks be designed in accordance with the latest ANSI standard. The RMI guidance gives additional information on design, use, load containment, housekeeping, and equipment handling near racks.

It is well recognized that industrial storage racks are frequently damaged in workplaces by powered industrial trucks, often jeopardizing their load capacity and stability. The guidance document requires employers to periodically inspect all components of the rack system for damage and decay and provides factors employers should consider when determining the frequency of those inspections. Steel frame repairs and modifications must be designed by a qualified engineer and installed by qualified installers, who must repair the damaged storage rack to a strength equal to or greater than the original load-bearing capacity.

Unfortunately, many employers do not utilize qualified individuals to make the necessary repairs, instead using maintenance employees or third parties who are not certified welders or otherwise qualified to perform hot work repairs. This problem is further compounded by repairs that are made utilizing steel replacement components that do not have the same structural design capacity as the original storage rack components. As a result, the repairs are inadequate and there is no assurance that the storage rack has the same structural

load bearing capacity as originally designed. Employers should supply information on damage and proposed repairs to the original manufacturer or to a qualified engineer to ensure the racks are returned to the original structural design capacity.

#### Relationship to Powered Industrial Truck Standard

Most damage and accidents involving industrial steel storage racks are caused by an operator's incorrect operation of a forklift or other type of powered industrial truck. Under OSHA's Powered Industrial Truck Standard (29 Code of Federal Regulation 1910.178), employers must develop a written program to train all employees who will be required and authorized to operate forklifts as to the hazards of such equipment. Employers must conduct classroom-type training and actually observe the employee operating the equipment under the physical conditions of the workplace, such as aisles between industrial storage racks and loading material into the storage racks. The employer must provide a certificate stating the employee has completed the training. The employee must be retrained and recertified every three years, at a minimum, or after an accident or "near miss" that resulted from an unsafe act. In the event a steel storage rack is seriously damaged in an accident involving a powered industrial truck, the regulation will require the employer to retrain its employee on the operation of the powered industrial truck and maintain documentation of the retraining.

#### Storage of Material

In addition to the requirement that the storage racks themselves be stable and secure, the material itself – whether in bags, containers, bundles, or loose – must also be stored

in a manner that prevents sliding or collapse while it is in the storage rack. These materials frequently slide or collapse due to several factors:

- damaged pallets,
- torn cardboard or fiber packaging,
- damage to shrink wrapping,
- failure to properly place the materials within the storage rack by the forklift operator, and
- pushing material by the forklift operator too far within the rack and out of the storage rack position into the adjoining aisleway.

In order to prevent these occurrences, the employer must develop procedures to inspect materials being placed into the storage racks to ensure they are secure within their packaging and supported by an undamaged pallet. In addition, forklift operators must be trained on how to place these materials in the storage racks so the material packaging is not damaged and becomes unstable and that the loads are properly mounted within the storage rack enclosure.

#### OSHA Liability

In the event a steel storage rack were to collapse and OSHA can establish that the employer failed to install, inspect, maintain, and repair it to secure materials being stored from sliding, falling, or collapsing, the employer can be subject to civil citations ranging from serious (\$7,000) to willful (\$70,000). These penalties will increase on August 1, 2016, to \$12,500 for a serious citation and \$126,000 for a willful citation. In addition, there could be potential criminal liability if an employee was

*Continued on page 43*

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### ACREC Hires Lab Manager

The Clemson University Animal Co-Products Research and Education Center (ACREC) has hired Dr. Jonathan C. Hoskin as research laboratory manager. He will be assisting part-time with various duties associated with ACREC, including managing the office and main laboratory. Hoskin holds a PhD in food science from Pennsylvania State University and recently retired from the Clemson University computing and information technology division. He is a long-time ally of ACREC who helped with the early set-up of the center and the dedication conference held in March 2006.

### Clemson Researchers Honored

The Fats and Proteins Research Foundation (FPRF) has awarded the team of Vladimir Reukov, Clemson University research assistant professor, and Alexey Vertegel, Clemson associate professor, the 2016 Dr. Fred Bisplinghoff FPRF Innovation Award for their work to develop livestock feed preservatives based on antioxidant enzymes extracted from animal blood. The researchers have taken a novel idea from the lab bench, through pilot plant testing, to a stage where large granting agencies and venture capital sources have taken notice and also invested. Reukov and Vertegel have formed a company committed to taking this invention to market so renderers and their customers can benefit from naturally-derived, economical, and efficient antioxidants. The availability of these new antioxidants will not only provide an added market for animal blood, but will help preserve and extend the shelf life of animal fats and protein meals used in the production of pet food. This innovation could add value to every ton of rendered product.

The award was established in March 2015 by the FPRF Board of Directors. It is given annually to an FPRF grant recipient who successfully completed research on behalf of the North America rendering industry that led to a substantial contribution to the existing body of knowledge, to an increased usage of rendered products, or to improvements in operations, product quality, and safety. Considerations for the award include the inventiveness or creativity of the research and/or development topic, the timeliness and quality of the work, the researcher's ability to communicate results, and the potential impact on the rendering industry. In April 2016, the FPRF board re-named the award the Dr. Fred Bisplinghoff FPRF Innovation Award in honor of its beloved past FPRF president who died in December 2015.

Award recipients are nominated by FPRF officers and staff and approved by the board of directors annually at its spring meeting. Recipients of the award receive a plaque and \$1,000, and are invited to give a presentation at the foundation's annual convention in October.

### WRO Scientific Panel Welcomes Nutritionist

John Brennan, Nutreco Canada, has joined the scientific advisory panel of the World Renderers Organization (WRO). Brennan leads a team based in Guelph, Ontario, that focuses on multi-species animal nutrition and health-based research, technology transfer, and training to support Nutreco's animal nutrition businesses in Canada, the United States, and Mexico.

Brennan obtained a PhD in animal nutrition from the University of Alberta and joined Maple Leaf Foods (MLF) as a research scientist. He then became research manager at MLF Agresearch and eventually assumed overall responsibility for Nutreco's animal nutrition research program in North America. In April 2013, Brennan was elected chairman of the Animal Nutrition Association of Canada.

### Mountaire Farms Acquires Plant

Mountaire Farms has acquired the former Townsend Processing Plant and an adjoining property in Siler City, North Carolina. The company will renovate and update the plant into a modern state-of-the-art poultry processing facility that will provide over 500 jobs. As part of the acquisition, Mountaire will expand its newly acquired hatchery in Siler City and is looking for a suitable location to build a feed mill. Additional options for the processing facility are also being investigated.

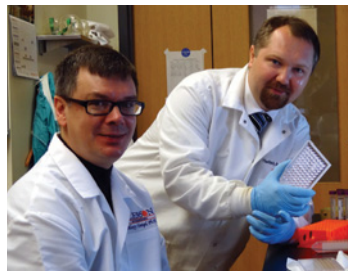
### Sothmann to Chair Global Hides Group

Stephen Sothmann, president of the U.S. Hide, Skin, and Leather Association (USHSLA), has been elected chairman of the International Council of Hides, Skins, and Leather Traders Association (ICHSLTA). Sothmann will serve a two-year term during which he will work to continue ongoing negotiations with the International Council of Tanners on an updated version of the international contract for the sale of hides and skins and on new regulations for products exported to China, which are due to take effect at the end of this year.

Victor Topper, of Australian tanners and traders and Al Topper, and Su Chaoying, president of the China Leather Industry Association, have been elected as vice presidents.

Sothmann is the current president of USHSLA, an affiliate of the North American Meat Institute, and previously served as the director of international affairs for both USHSLA and the American Meat Institute. He earned a law degree and master of business administration from Indiana University and a bachelor of arts degree from Purdue University.

Founded in 1929, ICHSLTA represents the interests of the hides, skins, and leather trades of more than 30 countries.



Vertegel (left) and Reukov

killed by a collapsing storage rack or materials. If there was a fatality, there is a potential for six months imprisonment as well as a penalty of \$500,000 against the employer and \$250,000 against an individual.

### Recommendations

In order to prevent any injury to an employee and be OSHA compliant, the employer should consider the following:

- Develop a program to ensure that storage racks are installed, maintained, and repaired in order to uphold the manufacturer's original load-bearing design capacity.
- Conduct frequent inspections to identify damage to the storage racks that may affect the load-bearing capacity.
- Require employees to immediately report any incidents where storage racks have been damaged.
- Immediately remove from service any storage racks where the damage has created a hazard of imminent collapse.
- Utilize a qualified engineer or the original manufacturer to specify any repairs that may be necessary.
- Utilize qualified repair personnel to perform repairs and authorized replacement components.
- Establish a procedure to inspect the materials prior to them being placed in the storage racks to ensure the materials are secure against sliding or collapse.
- Properly train forklift operators on how to place loads of material onto the storage rack so the load is secure against sliding or collapse.
- Document the employer's program on an ongoing basis. **R**

*Readers of Render magazine can receive complimentary copies of this article and future articles on OSHA and employment law related topics by e-mailing the author, Mark A. Lies II, at [mlies@seyfarth.com](mailto:mlies@seyfarth.com).*

## Call for Nominees

### Don Franco Distinguished Service Award

Exemplary nominees are now being accepted for the Don Franco Distinguished Service Award, the National Renderers Association's (NRA's) highest honor presented to an NRA member, staff, or friend of the association for outstanding contribution and service on behalf of the rendering industry.

#### Nominations are due by July 31, 2016

This prestigious award recipient will be announced and presented at the NRA Annual Convention in October. The winner will receive a plaque, a personal commendation from the NRA Board of Directors, and public recognition in *Render* magazine. A second plaque hangs in the NRA headquarters office recognizing each award recipient. The NRA Executive Committee will select the winner. Since the award is designed to recognize Franco's legacy of excellence, it will be presented when merited and not necessarily every year.

The Don Franco Distinguished Service Award recognizes truly outstanding work on behalf of the rendering industry in science, policy, marketing, or communications. Examples of important contributions that will be considered are described on the Don Franco Distinguished Service Award Nomination Form available on NRA's website at [www.nationalrenderers.org](http://www.nationalrenderers.org).

Franco, who passed away in early 2015, was a highly respected and influential leader as vice president of NRA's scientific services and president of the Animal Protein Producers Industry from 1992 to 2002. He was one of the editors of *The Original Recyclers* published by NRA in 1996 and a contributing author to *Essential Rendering* in 2006. Prior to NRA, Franco served as director of slaughter operations for the United States Department of Agriculture's Food Safety and Inspection Services. He held a master of public health degree and a doctorate in veterinary medicine. The North American rendering industry benefits today from Franco's work.

**Nomination forms are available on NRA's website at [www.nationalrenderers.org](http://www.nationalrenderers.org) or by request to [balexander@nationalrenderers.com](mailto:balexander@nationalrenderers.com), (703) 683-0155**  
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## WHAT MATERIALS ARE RENDERED?

### Packing Plants

**147.2 MILLION** head of cattle, calves, hogs & sheep are slaughtered annually in the US



**10 BILLION**

chickens and turkeys are processed each year in the US



**APPROXIMATELY 50%** of the animal is considered inedible by Americans and goes to renderers including: bones, fat, blood, feathers & some internal organs

**Farms** Some animals die on the farm from injury, old age, or other issues. These animals represent about 4.5% of rendered product

### Grocery Stores generate

**1.92 BILLION POUNDS**

of scraps, fat, bone, expired meat & used cooking oil annually

### Renderers collect

**4.4 BILLION POUNDS** of used cooking oil per year in the U.S. and Canada

## WHAT ARE THE PRODUCTS OF RENDERING?

### Renderers collect:

**56 BILLION POUNDS**

of raw materials every year in the U.S. and Canada



If all renderable product was sent to the landfill, all available landfill space would be used in

**4 YEARS**

### Renderers recycle these materials into:

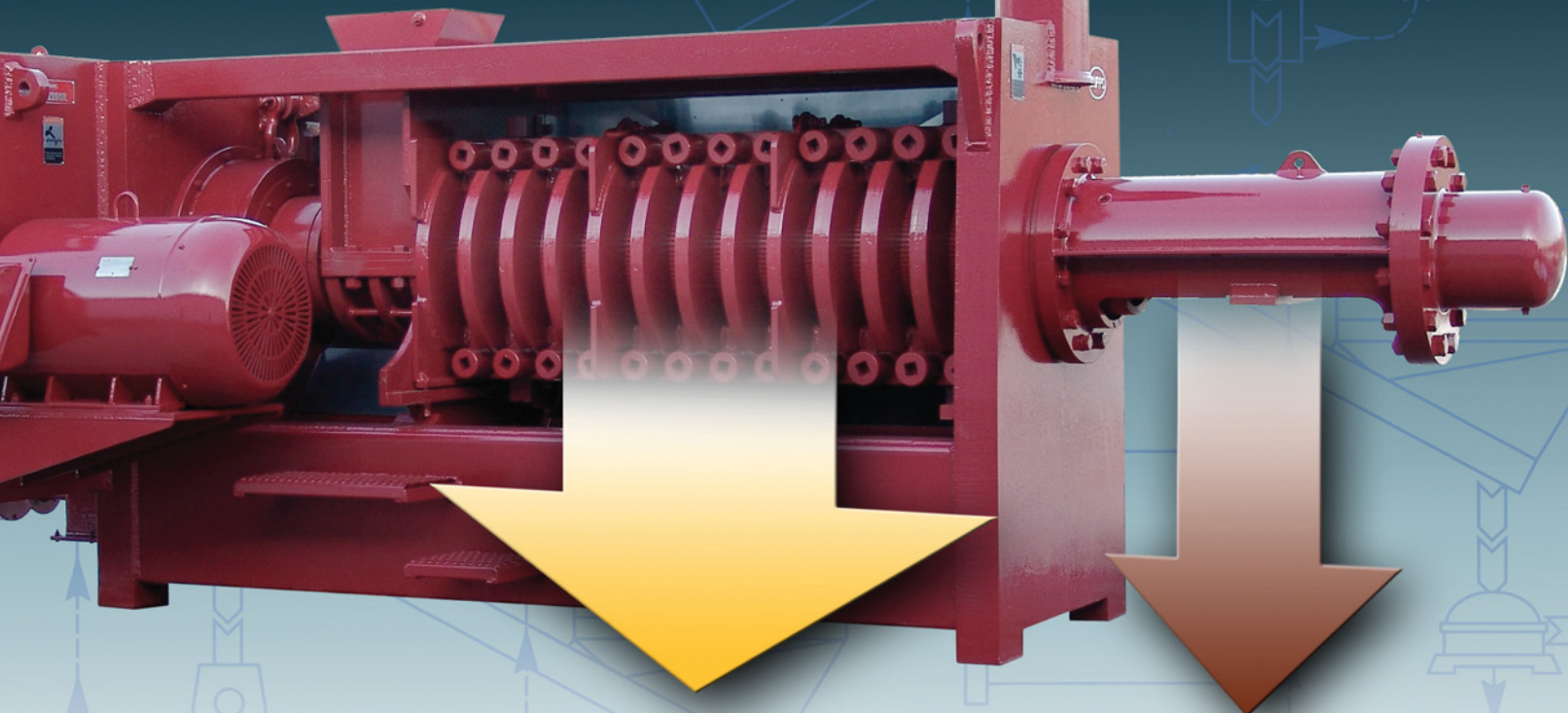
**10 BILLION POUNDS**

of fat and oil products

**9 BILLION POUNDS**

of protein products annually

# Extract more **fat**



**Dupps Pressor® with HCPR yields up to **110 lbs. more high-value fat** every hour.**

**Up to 25% less fat residual in the crax.**

## **The Dupps Pressor® with the new HCPR™ Shaft**

**Lower your fat residuals.  
Learn how at [www.dupps.com](http://www.dupps.com)  
or (937) 855-6555.**



- You can't afford excess residual fat. A Dupps' Pressor screw press with the new Hybrid HCPR (High Compression Press Release) shaft can dramatically lower residuals in most rendered products.
- The HCPR combines high compression with a release/re-compression feature—just like squeezing a sponge twice releases more moisture, the HCPR compresses material twice to release more fat.
- In many cases, the HCPR Shaft can be retrofitted to your existing Pressors.



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**REDUCE  
CO<sub>2</sub>**

**LEADING THE WAY FOR  
GENERATIONS TO COME**

For each 1 metric ton of CO<sub>2</sub> produced by operating rendering plants, 7 metric tons of CO<sub>2</sub> are removed from the environment by renderers.



**Baker Commodities Inc.**

Recycling for Life®

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*Protecting communities and the environment since 1937*