Taking Animal Fat Biodiesel to the Next Level

A Buyer’s Guide to Rendered Fats

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Now for the Heavy Lifting

The favorite pastime in Washington, DC, whenever a new president is elected is the guessing game over who will get to be secretary of whatever-department-you-care-about. However, when it comes to the business of doing business, the truly critical appointments are all of those folks chosen to be under, deputy under, and assistant secretaries – the subcabinet appointments – who have day-to-day influence over the regulatory programs that affect us all.

While career bureaucrats will continue to run the agencies and write the regulations by which we must all live, it’s the subcabinet appointments who are their bosses, who make the political decisions, and who directly impact how those regs are written and how a program is implemented. They can also be the best conduit for moving information up the chain of command, or they can be the immoveable barrier to getting your message heard.

Subcabinet appointees come in many stripes. The worst of all worlds for any lobbyist is to have a good, solid secretary, but then have under and assistant secretaries with authority over critical programs who come into the job with an agenda. These are the folks with political or personal philosophies so intense the overall administration policy gets lost. Then there are the ideologues. These are the appointees who have consumed so much of the political/philosophical “Kool-Aid” that real world considerations and pragmatism get lost. And, finally, we have the pure, unadulterated political appointee, the person who’s named to a job as pure political compensation for dollars donated or influence wielded. Generally they’re shunted off to jobs where they can do little real damage – and they get a nifty title – but they generally bring little or no leadership or experience to the policy arena or to governing.

President Barack Obama’s cabinet level appointments are generally excellent choices, deemed more moderate than radical. There are a couple of wild cards in the deck – union champion Representative Hilda Solis (D-CA) for secretary of labor, or former Environmental Protection Agency Administrator Carol Browner as chair of the new White House environmental/energy council, for instance – but the overall insider consensus is Obama made centrist choices, individuals with identifiable expertise and government experience. This was the smart way for Obama to go given the economic challenges his administration faced even before he was sworn in.

Depending on the personal style and desire of the anointed department secretary, that person can be either the head cheerleader for the department – out on the hustings making speeches, promoting the policies and programs of the new administration – or that person can be a take-charge, hands-on kind of secretary.

In the case of secretary of agriculture, it’s never been an “A list” job in any new administration. However, the choice of secretary is critical; it’s a job that touches everyone. And let us not forget, the job means you’re running the second largest bureaucracy in the federal government after the Pentagon. Former Iowa Governor Tom Vilsack – now Secretary of Agriculture Tom Vilsack – is still getting to know Washington and the ag players, and from what I’ve read, he will likely be the kind of secretary who will expect good people to do good jobs. Folks in Iowa from both sides of the aisle who know and have worked with Vilsack say he’s smart, the kind of guy who does his homework. In order for Vilsack to concentrate on the big picture, he will need a subcabinet team that ensures he does not have to get down in the weeds on programs, policy implementation, or the daily evolution of implementation and enforcement actions.

The chain of command starts with Vilsack’s secretarial team. His chief of staff will hold the keys to the kingdom, essentially controlling who gets face time with the secretary. However, a good chief of staff plays fair and ensures the secretary hears both sides of critical issues. It will be his or her job to ensure that the wishes of the secretary are carried out, while running his office day-to-day and insulating him from the minutiae and the headaches. There are generally two deputy staff directors, one for policy and the other for administration/agency coordination. Both are critical.

Then there’s the deputy secretary slot. This slot has generally been reserved for a strong administrator, someone who can keep the overall department operations train running on time. However, depending on the person sitting in the secretary’s chair, the deputy secretary can serve as the “shadow secretary,” with significant policy development influence, along with strong connections at the White House and other departments. Strong deputy secretaries in my experience include Chuck Conner, who came to the U.S. Department of Agriculture (USDA) from the White House and was acting secretary after Secretary Mike Johanns resigned to run for and win the junior Senate seat from Nebraska; Dick Lyng, who went on to become secretary; and Jim Moseley, deputy secretary for Secretary Ann Veneman.

The key under secretary spots at USDA for the renderers are under secretary for marketing and regulatory programs and the under secretary for farm and foreign agricultural services.
While other subcabinet slots, such as the under secretary for food safety, impact rendering, it’s these two jobs and the people who fill them that have the biggest, most consistent impact on independent renderers.

The under secretary for marketing and inspection services has authority over the Animal and Plant Health Inspection Service (APHIS) and its myriad programs, including those that touch on the animal health components of the bovine spongiform encephalopathy issue, such as carcass and specified risk material disposal issues, and coordinating these issues with the Food Safety and Inspection Service. Export permitting falls to a section of APHIS, as well as product and market promotion. He/she will also have animal identification responsibility, along with program decisions on how far and how fast such a program will go, particularly when it comes to whether the Obama administration decides to stick with voluntary premises or move to mandatory individual animal identification. Other agencies/offices overseen by this under secretary include biotechnology services, grain inspection, and packers and stockyards.

Over at farm and foreign agricultural services, the critical mass centers on management of the Commodity Credit Corporation, that deep well of federal dollars, along with loan and price support programs, crop/livestock insurance, and the Foreign Agriculture Service, including trade agreements, food assistance, and market promotion/cooperator programs.

So, the presidential appointment lottery isn’t over by a long shot. Names are floated almost daily for subcabinet jobs, and almost as quickly as a top candidate emerges, they’re replaced in the guessing game by someone you’ve never heard of. We’ll keep you posted.

Oh, and by the way, if you know of some solid folks who are looking for jobs, kick them to the www.change.gov Web site, and let the vetting process begin.
California Adopts Landmark Air Pollution Rules

In mid-December, the California Air Resources Board (CARB) adopted two critical regulations directly aimed at cleaning up harmful emissions from the estimated one million heavy-duty diesel trucks that operate in California.

Beginning January 1, 2011, the Statewide Truck and Bus rule will require owners of diesel trucks with a gross vehicle weight rating of more than 14,000 pounds to install diesel exhaust filters on their rigs, with nearly all vehicles upgraded by 2014. Owners must also replace engines older than the 2010 model year according to a staggered implementation schedule that extends from 2012 to 2022.

Also adopted was the Heavy Duty Vehicle Greenhouse Gas Emission Reduction measure that requires long-haul truckers to install fuel efficient tires and aerodynamic devices on their trailers that lower greenhouse gas emissions and improve fuel economy.

According to CARB, heavy-duty big rigs are the largest remaining source of unregulated diesel emissions, responsible for 32 percent of the smog-forming emissions and nearly 40 percent of the cancer-causing emissions from diesel mobile sources (other diesel emitters include trains, off-road vehicles, and marine engines). The greenhouse gas reduction measure applies to more than 500,000 trailers, while the diesel regulation includes low-use vehicles, emergency and military vehicles, and personal use motor homes. School buses would be subject only to requirements for reducing diesel particulate matter and not for engine replacement.

**Effect on Renderers**

When asked how this new rule would affect renderers in California, only Baker Commodities responded. Dennis Luckey, executive vice president for the Los Angeles-based company, said his understanding of the regulations is that neither will have a material effect on Baker’s fleet.

“In recent years, federally imposed requirements of heavy-duty vehicle manufacturers have lowered emissions on new trucks,” Luckey stated. “The most recent requirement, which became effective on January 1, 2007, saw the addition of a catalytic converter exhaust treatment system, referred to as a diesel particulate filter (DPF), to all models manufactured after that date. This system was designed to minimize the amount of nitrogen oxide (NOx) emissions that occur during idle and when the engine is cold and not burning fuel efficiently.”

According to Luckey, additional federal regulations effective January 1, 2010, will further require engine manufacturers to install selective catalytic reduction technology on all new trucks, which improves the NOx reduction provided by the DPF exhaust treatment system through the injection of a urea-based reagent into the system.

“The effects of reducing emissions imposed by recent federal regulations on California companies like Baker are felt and will be felt with every post January 1, 2007, new truck purchase, while the new CARB regulation will seldom impact cost to any operation that regularly upgrades its fleet with the newer less polluting vehicles,” Luckey added.

But those companies with older equipment (pre-2007) operating in California may be forced to take their equipment off the road when mandated to comply with the new regulation. Pre-1994 vehicle models will be the first required to comply on January 1, 2011.

“At that point, to continue operation of a 1993 and older vehicle will require the installation of a specialized diesel exhaust filter system at a cost of nearly $25,000 per unit,” he commented. “In each of the following years, the next older model vehicles will be required to comply. It is unlikely that an operator would choose to invest such a large sum in a vehicle that was 15 years old unless subsidies greater than low-cost financing are made available. The 2007-2009 model years would eventually be required to comply, but at dates that are likely to be near the end of their useful life.”

Lucky doesn’t believe renderers in California will be categorized as long-haul operators under the greenhouse gas emission reduction rule, and thinks other states will probably follow California’s lead in reducing emissions at some point in the future.
California has the nation’s most polluted air. Because of new engine standards established in 2001, diesel engines operating in California have been getting cleaner, but are not getting clean fast enough to meet the state’s air quality goals. With the new Statewide Bus and Truck rule in place, by 2014, CARB estimates diesel emissions will be 68 percent lower than they would be without the regulation, while NOx emissions will be 25 percent lower.

CARB staff held dozens of workshops and met with hundreds of business owners and other stakeholders over the last 20 months. Without the diesel regulation, California will not be able to meet U.S. Environmental Protection Agency-mandated air quality standards and deadlines, and could subsequently lose billions of dollars in federal highway funding.

More information on the Statewide Bus and Truck Regulation is available at www.arb.ca.gov/regact/2008/truckbus08/truckbus08.htm. For information on the Heavy Duty Vehicle Greenhouse Gas Reduction Measure, visit www.arb.ca.gov/regact/2008/ghghdv08/ghghdv08.htm.
As the demand for biodiesel increases in the United States, manufacturers are looking to diversify the feedstocks that can be used to produce this renewable fuel. The biodiesel industry is looking to animal fat as one such choice.

The amount of animal fat used by the biodiesel industry has more than doubled from 2006 to 2008, while allowing biodiesel to be competitive in the diesel fuel marketplace.

“Our industry understands that the market potential for biodiesel is huge in that it’s going to take vegetable oil and animal fat, as well as newly developed feedstocks, to satisfy that growing demand,” explained Dave Elsenbast, vice president of procurement at Renewable Energy Group (REG) and an American Fats and Oils Association board member. “We haven’t even begun to scratch the surface of the potential demand for biodiesel in the U.S. marketplace.”

Approximately 700 million gallons of biodiesel were produced in the United States in 2008 and new federal legislative measures effective in 2009 will allow for biodiesel made from new feedstocks to be competitively priced with conventional petroleum diesel. Innovative production techniques mean manufacturers can continue to produce high quality biodiesel from feedstocks like animal fats.

There’s no question that demand for competitively priced biodiesel exists and is increasing, and that there is no one “silver bullet” feedstock that can meet all the needs of this growing industry. The question is, which feedstocks will be used to fill this demand?

To make animal fat even more appealing as a feedstock, the biodiesel industry is looking at potential changes in the way it works with the rendering industry, such as pricing animal fat on an index and utilizing advanced technology for filtering impurities in the production process.

Creating Opportunity for Competitively Priced Biodiesel

Of course, feedstocks must remain affordable or biodiesel producers end up pricing themselves out of the diesel market.

“We’re creating a large portfolio of feedstocks,” explained Elsenbast, who oversees feedstock purchases and risk management for the nine commercial-scale biodiesel facilities that make up the REG network. “The demand is increasing and we are producing more biodiesel, and a portfolio of feedstocks allows us flexibility. “When the price of one goes up, we can reduce production with that feedstock and increase the use of one that costs less, such as animal fats,” Elsenbast said of REG’s use of tallow, poultry fat, and choice white grease.

According to a report by Informa Economics, approximately 20 percent of the biodiesel manufactured in the United States in 2008 was produced from animal fats and greases, and recycled cooking oils. That amount nearly doubled from 2007.

After biodiesel companies began purchasing animal fat in late 2006, the price increased dramatically, offering renderers additional value to their partnership with the biodiesel industry. As reported by The Jacobsen Publishing Company, the average price of choice white grease at Chicago in 2006 was 16.13 cents per pound. By 2008, that value had more than doubled to 33.22 cents per pound. Bleached fancy tallow saw a similar increase, with an average price at Chicago of 16.86 cents per pound in 2006, and 34.2 cents in 2008.

Informa Economics reports indicate the biodiesel industry accounted for 13 percent of the animal fat market in 2008. Yet, animal fat remains one of the most price volatile of any feedstock being used to produce biodiesel.
It’s also the only feedstock used by the biodiesel industry that is not traded or indexed to a regulated futures exchange. Being able to manage price risk, and trade forward ownership and sales positions is critically important to pricing finished product in the biodiesel industry and should help the consistency of demand for renderers’ products.

The biodiesel industry is asking livestock slaughter and rendering companies to consider selling animal fats at a price that is indexed to heating oil, which is traded on the New York Mercantile Exchange.

“We feel this would remove some of the volatility associated with animal fats we’ve seen in the last year and provide forward pricing options to biodiesel producers, who in turn can offer forward sales pricing options to consumers of biodiesel,” explained Elsenbast. He notes that now is an ideal time for animal fat sellers to create a pricing index program because the animal fat market has begun to correlate to the heating oil market (see Chart 1). As the price of heating oil goes up, the price paid for animal fat would increase by the same percent.

**Added Value from Recent Legislation**

On January 1, 2009, the federal Renewable Fuel Standard (RFS) took effect calling for 500 million gallons of biodiesel to be used nationally in 2009. That mandate will grow to more than one billion gallons in 2012.

Animal fat biodiesel has a very good score when it comes to greenhouse gas emissions. A carbon lifecycle analysis for animal fat biodiesel has not been released, but biodiesel made from soybean oil generates 79 percent less atmospheric carbon overall than regular diesel and researchers are anticipating similar or even better results for biodiesel made from animal fats. This score makes animal fat biodiesel more competitive under proposed RFS regulations.

Tax credits have helped the biodiesel industry remain competitive in the diesel field. At the beginning of this year, the federal blender’s tax credit for non-virgin fats and waste vegetable oil grew from 50 cents to one dollar per gallon, and that price point could potentially be passed on as value to consumers as competitively-priced fuel. (This change was only made for biodiesel. Renewable diesel still receives a 50 cent tax credit.)

**Production Expertise Reigns**

It is the production expertise and technology, not the feedstock, that determines finished biodiesel quality.

“The biodiesel process that we use involves taking a triglyceride molecule and converting that into biodiesel,” explained Larry Breeding, plant manager at Western Iowa Energy, a REG network 30 million gallon per year biodiesel facility in Wall Lake, IA. “We have to remove anything from the feedstock that’s not a triglyceride molecule.”

At Breeding’s facility, a proprietary pretreatment process refines and filters the feedstock. The refining process removes any phosphorous, while filtering takes out other metals that may be present.

Currently, four plants managed by REG, including Western Iowa Energy, are outfitted with fatty acid stripping columns that allow ASTM-quality biodiesel to be produced. Elsenbast said that the addition of this equipment demonstrates the commitment by REG and its network of partners to a multi-feedstock business model.

“This is a large investment for the REG network,” Elsenbast said. “We are confident that animal fat will be a valuable resource for us in the future.”

**Quality, Regardless of Feedstock**

Renewable Energy Group guarantees that every lot of biodiesel produced exceeds ASTM specifications, regardless of feedstock. Each load of biodiesel sold comes with a certificate of analysis guaranteeing the product’s composition and quality.

“It is REG’s production technology that allows this guarantee to be in place,” explained Myron Danzer, vice president of customer and technical service who oversees quality for the network. “Because of its characteristics, some biodiesel manufacturers are faced with animal fat-based biodiesel that often does not meet ASTM cold soak filtration standards, which became mandatory in October 2008.”

Cold soak filtration is a new ASTM requirement indicating cold weather performance. The intent of the test is to look for insoluble particulate matter that might fall out of solution in biodiesel after being stored at cold temperatures for an extended period of time. Impurities in animal fat left behind from the rendering process often make it difficult to purify the biodiesel to the necessary standard. REG plants with the capability to manufacture biodiesel from animal fat produce a fuel that exceeds ASTM standards, including the cold soak filtration requirement. They have done so by running the product through their patent-pending filtration process.

Breeding and his staff spent months working to produce a biodiesel that could stand up to and surpass industry cold soak specifications.

*Continued on page 12*
Animal Fat Biodiesel Continued from page 11

“Western Iowa Energy began working with choice white grease in December 2006. By spring of 2007, we had a product we were ready to sell,” Breeding said. He acknowledged that some animal fat feedstocks show up to the plant in better shape than others, but his team and his plant are up to the challenge.

“When we first began two years ago, we started with choice white grease,” Breeding said. “And since we weren’t using a lot of it, we were able to get product that was of pretty good quality. As we began to use more and more, we had to begin using fat that was not of the same quality, but we were still able to meet and then exceed ASTM specifications.”

Distributor Confidence
Marketing has been integral to REG’s ability to sell biodiesel made from animal fat. There has long been a belief in the downstream petroleum industry that biodiesel made from tallow, yellow grease, and other rendered fats is not of as high a quality as biodiesel made from soybean oil. REG has taken aggressive measures to help its customers overcome their stigma for the product. Constant communication with partners and customers throughout the distribution chain has been crucial.

“We found that our customers were most concerned with how well the product was made, not what it was made of,” said Gary Haer, REG’s vice president of sales and marketing. “Once we made the quality guarantee that we will exceed ASTM specifications regardless of feedstock, that’s when we got over this ‘soy is quality and nothing else is quality’ mindset.”

REG began selling animal fat-based biodiesel as soon as Western Iowa Energy began producing it in the spring of 2007. As time progressed and REG’s portfolio of feedstocks grew, the company launched a new product lineup, REG-9000, in April 2008. The lineup is unique in the biodiesel industry because the fuel is marketed based on finished fuel attributes, not feedstock.

According to Haer, the transition to marketing the biodiesel based on finished fuel attributes made sense because that is how REG’s largest customer base, the petroleum industry, sells its own products.

“Gasoline and diesel fuel purchased by the petroleum industry are purchased on a spec of the fuel, just as we’ve done with the REG-9000 lineup,” Haer explained. “That absolutely influenced our decision to market our fuel this way. We wanted to give our customers confidence in the quality of the fuel.”

The current lineup consists of three products – REG-9000-1, REG-9000-5, and REG-9000-10 – each categorized by their cloud point in degrees Celsius. All three products are made from a mixture of feedstocks, with vegetable oils as the main component of REG-9000-1 and animal fat as the main component of REG-9000-10.

One of the biggest hurdles facing the company’s animal fat-based biodiesel is educating its customers. Because biodiesel made from animal fat has a higher cloud point, precautions must be taken during winter months to ensure that the fuel is used and stored properly.

“Technical support to the supply chain and to our customers has been key for REG to develop as we integrate new feedstocks like animal fat and open the market for biodiesel with higher cloud points,” Haer said. He added that some biodiesel customers are nervous about animal fat-based biodiesel because of bad experiences with biodiesel producers who weren’t meeting the quality specifications in the past.

“We’re selling through a lot of negative impressions with animal fat,” Haer commented. To combat those impressions, REG engineers have been working one-on-one with customers to educate them on operability issues concerning animal fat-based biodiesel. As technical lead, Danzer works with everyone from blenders to distributors to customers at the pump.

“Typically the way fuel has been handled over the last 50 to 75 years is a distributor will go to the terminal, pick it up, blend it in, and that’s all he really has to worry about,” Danzer explained. “Well, now a distributor has to worry about cloud points and certain characteristics. He has to manage his fuel more, and then he has to think about his end user and where he’s going to use it.”

This hard work has paid off, and petroleum distributors are beginning to embrace biodiesel made from feedstocks other than soybean oil.

“Since the REG-9000 launch last year, we have seen great success in the market’s acceptance of the product,” Haer said. “That’s been a winning situation for our company and a great benefit for the rendering companies’ demand for their feedstock.”

Although REG-9000-10 has a higher cloud point than other fuels, some of its other attributes make it more desirable. Oxidation stability and cetane are both higher than for lower cloud point biodiesel. All biodiesel already has a higher cetane number than conventional diesel fuel, but the even higher cetane number of animal fat biodiesel can yield better engine performance. That’s a benefit for truckers, school buses, garbage trucks, and others using the fuel.

One of the greatest benefits of the new lineup, according to Haer, has been the company’s ability to provide customers with choices, not only in fuel attributes, but also in price.

“We’ve had very positive feedback from customers,” Haer said. “They like that there are price point differences and that they can choose. We’re still in the process of getting customers to accept the product year-round, but we’re getting there. I firmly believe that the momentum will continue.”

The Next Level
With index pricing programs and advanced process technology, Elsenbast and his team are bullish on animal fat-based biodiesel.

“The future of animal fat biodiesel looks bright,” he explained. “The market potential for competitively priced biodiesel is strong, and the market will continually be looking for feedstocks that provide the best economics while offering quality.

“The integration of animal fat for biodiesel is a never-ending progression of improvement and relationship building,” Elsenbast continued. “Recent values for animal fats demonstrate that value from the biodiesel is here, and here to stay, for the American livestock producers, livestock slaughterers, and the entire rendering industry.” R
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Won’t Let You Down
World production of animal fats is more than 6.8 million tons, with more than half produced in North America. Rendered products are used in five major sectors of today’s economy.

The first, and most important, is in livestock, poultry, and aquaculture production, where animal fats and proteins are used in efficient, high-energy rations. This helps to increase production efficiency, thereby making meat, milk, and egg products more affordable. Judicious use in pet foods helps sustain the health and longevity of companion animals.

Industrial use creates a second sector. As many as 3,000 modern industrial products contain lipids and lipid derivatives. Some of the major applications for rendered products include the chemical industry, metallurgy, rubber, and in crop protection agents and fertilizer formulations.

Third is the manufacture of soaps and personal care products. Tallow is still the basic ingredient in making both toilet and laundry soaps. The global market for these products continues to grow.

The food industry, which uses edible tallow, lard, and other edible animal by-products such as defatted meat tissue, gelatin, and blood meal, forms a fourth sector.

Finally, an emerging industrial use is the production of biodiesel from animal fats and recovered cooking oils. Environmental benefits and cost are driving forces behind the growth of using rendered fats and oils in this market.

But before a biodiesel producer can choose a rendered fat as a feedstock, they must first educate themselves on the multiple characteristics of this highly sought-after commodity.

Types of Fats

Industrial Tallow

Animal tissue containing fat is converted to tallow by a process called rendering. Basically, rendering is a procedure by which lipid material is separated from meat tissue and water under the influence of heat and pressure.

There are two principal methods of rendering. In the wet rendering process (old method) the animal tissue is placed in an enclosed pressure vessel (cooker) and superheated steam is injected to provide both heat and agitation. The mixture is cooked at 230 to 250 degrees Fahrenheit (110 to 120 degrees Celsius) for three to six hours. At the end of this period, the mixture settles into three phases: a top fat layer that is drawn off, an intermediate water layer, and a bottom layer consisting primarily of proteinaceous material. This method is no longer in wide usage. Protein and fat quality were more easily compromised during the extended cooking time. In the dry rendering process, the fatty tissue is heated in jacketed containers, mechanical agitation is provided, and the water is evaporated either at atmospheric or at increased pressure.

Today, modern rendering plants feature a continuous rendering process with automated operations and highly sophisticated air and water pollution prevention equipment.

Renderers process a variety of raw materials from various sources, including:

- packing house by-products, such as organ fats, offal, bones, and blood;
- boning house material that consists of bones and meat trimmings;
- meat market trimmings, including adipose and intermuscular fats, bone, cartilage, and meat trimmings;
- restaurant greases and recovered cooking oils (these are processed and stored separately);
- fallen animals.

Edible Beef Tallow

U.S. edible beef tallow is made exclusively from the highest quality edible beef fat processed for human consumption and inspected by the U.S. Department of Agriculture’s (USDA) Food Safety and Inspection Service. U.S. edible tallow, certified and inspected in food-grade plants, is available deodorized or undeodorized. Deodorized tallow does not alter the taste of foods, whereas undeodorized tallow is often selected to enhance the flavor of foods.

In the United States, regulations specifically restrict meat plants to the processing of only one type of animal, so no mixing of different animal fats occur. These USDA regulations ensure that the product is 100 percent pure beef fat. Certified halal and kosher tallow are also available in the United States.

Lard

Lard is the fat rendered from fresh, clean, sound tissues of swine in good health at the time of slaughter. The composition, characteristics, and consistency of lard vary greatly according to the feeding regime. The higher the level of unsaturated fats in the diets of pigs, the softer (higher iodine value) the fat.

Yellow Grease

This material is usually made from restaurant greases (fats and oils from cooking). Another source could be from rendering plants producing lower quality greases. The specifications for yellow grease are as follows:

- Free fatty acids – 15 percent maximum
- Fat Analysis Committee (FAC) – 39 maximum
• Moisture, unsaponifiables, and impurities – two percent maximum
• Pesticide residue – refer to paragraph later in this article

Feed Grade Fats

Feed grade fats are often stabilized blends of animal and vegetable fats. They are produced in the commercial processes of rendering offal from livestock and poultry tissues. Feed fats consist predominantly of triglyceride of fatty acids and contain no added free fatty acids.

Any tallow or grease could come under this category although only the low-grade tallow or greases are used since they are less expensive. With the expanding use of fats in feed, some feed grade fats may include acidulated vegetable soapstock blended with tallow/greases.

Fats Used as Fuel

Because of their chemical composition, fats release concentrated amounts of energy when burned. This energy can be used as a heat source in industrial boilers or to fuel furnaces. Most fats provide comparable amounts of heat to common fuel oils. Rendered fats, like vegetable oils, can be used to make biodiesel with successful results.

Quality Control Specifications and Tests for Fats

Free Fatty Acid

One measure of fat quality is the free fatty acid (FFA) content. Fats are normally composed of three fatty acids linked to glycerol via ester bonds. FFAs are produced when those fatty acids are freed by hydrolysis. Therefore the presence of high levels of FFAs indicates the fat was exposed to water, acids, and/or enzymes. Fats should be processed to contain as low a moisture level as is feasible so that hydrolysis does not occur during subsequent storage.

Increased levels of FFAs in fats have been shown to reduce the digestibility and thus energy content of fats. On the average, each increase of 10 percentage units in FFAs results in a corresponding reduction in digestible energy of 1.3 and 1.5 percentage units in weanling and growing pigs, respectively (Powles, et al. 1995. Journal of Animal Science 61:149).

A common source of vegetable fats used in blended feed fats is acidulated soapstock. This by-product of edible oil refining has very high FFAs since it was intimately exposed to water and acid during its production. High levels of FFAs should be considered when estimating energy content of fats for feeding. (Nutrient Requirement of Swine, 10th Revised Edition. 1998. National Research Council, Table 11-10, p.141, footnote (d).)

The reaction between an alkali and fat or fatty acid is the basis of two important analytical determinations. Firstly, acid value is defined as the number of milligrams of potassium hydroxide required to neutralize the free fatty acids in one gram of fat. Acid value is a measurement that avoids the use of assumed molecular weights as occurs in the FFA determination.

The acidity of fats is also often expressed directly in

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terms of percent FFAs. The assumption usually made in the calculation is that the acids have a molecular weight equal to that of an oleic acid. The relation between acid value and percent FFAs calculated as oleic is as follows: one unit of acid value = 0.503 percent FFAs.

i) Free fatty acids as oleic, % = 
\[
\frac{10 \times \text{weight of sample}}{\text{ml of alkali} \times N \times 282}
\]

ii) Free fatty acids as lauric, % = 
\[
\frac{10 \times \text{weight of sample}}{\text{ml of alkali} \times N \times 200}
\]

iii) Free fatty acids as palmitic, % = 
\[
\frac{10 \times \text{weight of sample}}{\text{ml of alkali} \times N \times 256}
\]

Note – N = normality or strength of alkali. 282, 200, 256 = molecular weights of the respective fatty acids.

In many types of fats and oils the percentage of FFAs is calculated as oleic acid, but with coconut and palm kernel oils it is expressed in terms of lauric acid and in palm oil as palmitic acid.

Biodiesel plants having either a pre-treatment system or an acid esterification system can make use of higher FFA fats/oils. The price of the product should generally reflect the yield loss or increased processing cost compared to a low FFA fat/oil.

### Table 4. Chemical Data of Feed Grade Fats: Average Values

<table>
<thead>
<tr>
<th>Fat Source</th>
<th>°C Titer</th>
<th>% MIU</th>
<th>% Max. FFA</th>
<th>Iodine Value</th>
<th>U/S</th>
<th>% Fatty Acids</th>
</tr>
</thead>
<tbody>
<tr>
<td>FGF – for all feeds</td>
<td>29-45</td>
<td>2-4</td>
<td>40</td>
<td>40-100</td>
<td>1.0-3.0</td>
<td>25-50-50-75-4-40</td>
</tr>
<tr>
<td>FGF – for milk replacers</td>
<td>38-41</td>
<td>1</td>
<td>5</td>
<td>47</td>
<td>1.0</td>
<td>50 50 4</td>
</tr>
<tr>
<td>Beef tallow</td>
<td>38-43</td>
<td>1</td>
<td>5</td>
<td>47</td>
<td>1.0</td>
<td>50 50 4</td>
</tr>
<tr>
<td>Pork fat</td>
<td>32-37</td>
<td>2</td>
<td>15</td>
<td>68</td>
<td>1.6</td>
<td>38 62 12</td>
</tr>
<tr>
<td>Poultry fat</td>
<td>28-33</td>
<td>2</td>
<td>15</td>
<td>85</td>
<td>2.6</td>
<td>28 72 20</td>
</tr>
<tr>
<td>Acidulated vegetable soapstock</td>
<td>28-35</td>
<td>4-6</td>
<td>70</td>
<td>32</td>
<td>4.1</td>
<td>20 80 2</td>
</tr>
<tr>
<td>Palm oil</td>
<td>28-36</td>
<td>2</td>
<td>5</td>
<td>53</td>
<td>1.4</td>
<td>42 58 10</td>
</tr>
</tbody>
</table>

### Moisture, Impurities, Unsaponifiables

A sample of fat is weighed and the moisture is boiled off. The weight loss is calculated as the moisture content.

The recommended moisture level is one percent or less. Moisture can reduce the energy of a fat both by dilution and by causing an increase in the FFA content. Some condensation moisture is unavoidable with any feeding fat; however, it should be kept at a minimum. Moisture at low levels functions much like an antioxidant, but at higher concentrations is a pro-oxidant presumably because it can solubilize trace metals (Bailey’s Industrial Oil and Fat Products, 4th Edition, vol. 1, p.147). Moisture accumulates in the lower strata of fat storage units, which makes sampling difficult. Therefore, prior to sampling fat in storage, it should be thoroughly mixed by mechanical agitation.

Impurities are non-hazardous filterable materials not soluble in petroleum ether. However, impurities can create physical problems as they settle to create tank sludge and ultimately clog valves, lines, and nozzles. Impurities could be meat and bone particles remaining in the tallow after the rendering operation even though it is filtered, or it could be foreign materials such as sand or metal particles picked up after processing during storage and/or transport.

The same sample that moisture was determined from is filtered through a fine filter paper using a solvent. The weight of the material left on the filter paper is a measure of the insoluble impurities.

Unsaponifiables, or “unsaps,” refers to any material within the tallow that will not saponify (convert into soap) when mixed with an alkali. This basically covers components of the tallow that are not triglycerides such as plant sterols and pigments. A major portion of the unsap fraction is from plant sterols originating from the gut contents (forages, grains) of rendered offal. The determination of unsap content is based upon saponification followed by extraction with solvents and washing.

---

tallow. A low FFA results in a high glycerin yield for the soap manufacturer. Similarly, a low color tallow enables the manufacturer to produce high quality white bath soap or high quality fatty acids.

A refined and bleached analysis determines the Lovibond color of the sample after treatment with alkali and a specified bleaching earth. The Lovibond color is a much finer color reading compared to the FAC color standards. The color is reported as red and yellow. For example, a good extra fancy tallow will read 0.5 red and five yellow. In reading tallow, the yellow is 10 times the red (0.5 x 10 = five yellow).

The biodiesel producer will see a color impact slightly in the fuel color, but mostly in the glycerin product. Very dark glycerin may be discounted in the market, depending on the end use of the glycerin.

**Color**

FAC is the abbreviation for the Fat Analysis Committee of the American Oil Chemists’ Society. A sample of fat is filtered then compared with standard color slides mounted on a circular aperture. FAC color standard runs from one to 45 using odd numbers divided into five series for grading:

- 1-9 = light colored fats
- 11, 11A, 11B, 11C = very yellow fats
- 13-19 = dark, reddish fats
- 21-29 = greenish fats
- 31-45 = very dark fats

The different series are somewhat independent so there is no orderly increase in the color from the lowest to the highest numbers, i.e., fats graded 21-29 may actually be lighter than those graded 13-19. The FAC method is used when fats are too dark or green to be read by the Lovibond method.

Many customers require low FFA and color so that they can maximize the yield of products they manufacture from
Biodiesel producers should request as low a value of moisture, impurities, and unsaponifiables as possible as these will impact biodiesel end product quality. Moisture in the fats/oils will generate soaps in the methylester that must be removed and will interfere with the separation process of the glycerin.

Formation of soaps also interferes with the catalyst, binding it and increasing cost through increased need for methanol and catalyst. The unsap portion is also an indicator of likely filterability issues in the finished product and will need to be removed from the methylester, if it has not been removed from the oil prior to transesterification.

### Polyethylene

Almost all tallow contains polyethylene (PE), which is a foreign material in tallow, to some degree. It finds its way into the rendering plant as meat wrappers mixed in with the raw material. Most of the polyethylene wrappers used by the meat industry are of low density type that will melt at lower temperatures and stay soluble in the tallow.

At present the only feasible means of removing PE from tallow is to filter the tallow at low temperature using special filter aids. Most tallow consumers say they could stand up to 30 parts per million (ppm) while others indicate they could take as high as 200 ppm.

The problem with PE is that it does not stay soluble in all the various stages of the manufacturing process. In particular, if there is a sharp temperature drop the PE will come out of solution. With soap manufacturers it has been known to adhere to the inside wall of pipes and after it builds up darkened pieces flake off that later show up in the finished bar soap. It has also been known to cause blockage in fatty acid manufacturing plants and can coat the catalyst.

In biodiesel production, the PE will act the same as unsaps and will drop out of the methylester when it is exposed to sharp temperature drops.

### Titer

Titer is a measure of the solidification point of a fat after it has been saponified and the soaps reacidulated to FFAs. It is determined by melting the resulting fatty acid, and while slowly cooling, measuring the congealing temperature in degrees centigrade.

The titer is an important characteristic of inedible fats used for soap making to make harder soap, or as raw materials for fatty acid manufacture, and is also an indication of the firmness of natural edible fats such as lard. Under the accepted United States trading rules, inedible fats with titers below 40 degrees centigrade are classed as grease and those with higher titers are classed as tallow. Minimum titers are also specified for the different grades.

A good rule of thumb is when a sample of tallow stays liquid in a warm room, it has a low titer and if it hardens in a warm room it has a high titer. The reason for fat to have a high or low titer is due to its constituent saturated and unsaturated fatty acids (the higher the degree of unsaturation, the lower the titer).

Titer cannot be changed in the rendering plant; however, it can be greatly increased by a hydrogenation process in which hydrogen is added to the unsaturated bonds.

### Iodine Value

The iodine number is a measure of the chemical unsaturation of the fat and the results are expressed as the number of grams of iodine absorbed by 100 grams of fat sample. Iodine value (IV) can be used to estimate fat structure and unsaturation-saturation ratios. Unsaturated fats have higher IVs than saturated fats, so the higher the IV, the softer the fat and lower the titer.

### Rate of Filtration

This method was originated by Proctor and Gamble to ensure they were receiving clean tallow. Fats that will give processing difficulties such as slow filtration, emulsions, and foaming can be detected by this filtration method. The method is based on the amount of fat that will filter in a specified time under standard conditions.

The results from this test could run 40, which means 40 milliliters of tallow at 230 degrees Fahrenheit (110 degrees Celsius) passed through the filter paper in five minutes. Proctor and Gamble likes to purchase tallow with 35 to 40 rate of filtration. (Filter paper is VWR International, LLC, grade 417.)

Continued on page 18
Microscopic fines, polyethylene, and plant gums from the raw material could cause a slow filtration by plugging the pores of the filter paper, thus resulting in a very low rate of filtration. Tallow that has been water washed or pre-filtered will generally run a high rate of filtration due to removal of fines and gum.

This test can be helpful to biodiesel producers as a predictor of issues with filterability of finished methylester, but the rate of filtration must be calibrated to the specific biodiesel process. This test has not been correlated to the ASTM cold soak filtration test. Such a correlation between raw materials, processing parameters, and the finished product test might benefit the biodiesel and rendering industries as both try to understand field performance of biodiesel under various temperature and equipment conditions.

Pesticide Residues
Reputable renderers have implemented good manufacturing practices that prevent accidental contamination of rendered products by exposure to crop chemicals and PCBs. Hazard analysis and critical control point programs dictate products are not released for sale until being certified that U.S. Food and Drug Administration specifications are not exceeded. Some of these pesticide residues and their maximum levels are: DDT, DDD, DDE - 0.5 ppm; Dieldrin - 0.3 ppm; and PCB - 2.0 ppm. The method of analysis is by gas chromatography.

Saponification Value
This is an estimate of the mean molecular weight of the constituent fatty acids in a fat sample and is defined as the number of milligrams of potassium hydroxide required to saponify one gram of the fat. The higher the saponification value, the lower the mean chain length of the triglycerides.

Boehmer Number (Applied to Lard)
This test is used to determine if tallow is mixed with lard. For pure lard, the number should be greater than 73. If less than 73, it indicates contamination.

Fatty Acid Profile
The fat is saponified and then methyl esters are formed. These methyl esters of the component fatty acids are then injected onto a gas chromatograph column and the fatty acids

### Table 7. Final Melting Points of Average Samples of Fats and Oils

<table>
<thead>
<tr>
<th>Fat or Oil</th>
<th>°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babassu oil</td>
<td>26</td>
</tr>
<tr>
<td>Beef tallow</td>
<td>50</td>
</tr>
<tr>
<td>Butterfat</td>
<td>37</td>
</tr>
<tr>
<td>Cocoa butter</td>
<td>36</td>
</tr>
<tr>
<td>Coconut oil</td>
<td>26</td>
</tr>
<tr>
<td>Cottonseed oil</td>
<td>11</td>
</tr>
<tr>
<td>Lard, prime steam</td>
<td>45</td>
</tr>
<tr>
<td>Palm oil (refined)</td>
<td>40</td>
</tr>
<tr>
<td>Palm kernel oil</td>
<td>29</td>
</tr>
<tr>
<td>Peanut oil</td>
<td>13</td>
</tr>
</tbody>
</table>

### Hydrogenated Oils

<table>
<thead>
<tr>
<th>Fat or Oil</th>
<th>°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castor</td>
<td>87</td>
</tr>
<tr>
<td>Cottonseed</td>
<td>60</td>
</tr>
<tr>
<td>Sardine</td>
<td>57.5</td>
</tr>
<tr>
<td>Soybean</td>
<td>66.5</td>
</tr>
</tbody>
</table>

### Table 8. Iodine and Saponification Value of Samples of Vegetable Oils and Animal Fats

<table>
<thead>
<tr>
<th>Fat or Oil</th>
<th>Iodine Value</th>
<th>Saponification Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coconut oil</td>
<td>7.5-10.5</td>
<td>250-264</td>
</tr>
<tr>
<td>Corn oil</td>
<td>103-128</td>
<td>187-193</td>
</tr>
<tr>
<td>Cottonseed oil</td>
<td>99-113</td>
<td>189-198</td>
</tr>
<tr>
<td>Lard, prime steam</td>
<td>53-77</td>
<td>190-202</td>
</tr>
<tr>
<td>Palm oil</td>
<td>44-58</td>
<td>195-205</td>
</tr>
<tr>
<td>Soybean oil</td>
<td>120-141</td>
<td>189-195</td>
</tr>
<tr>
<td>Tallow – beef</td>
<td>35-48</td>
<td>193-202</td>
</tr>
<tr>
<td>Tallow – goat</td>
<td>33.5</td>
<td>199</td>
</tr>
<tr>
<td>Tallow – mutton</td>
<td>41.2</td>
<td>197</td>
</tr>
</tbody>
</table>

### Table 9. Quality Control Analysis with Approximate Running Times

<table>
<thead>
<tr>
<th>No.</th>
<th>Lab Test</th>
<th>Time Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>FFA</td>
<td>5 minutes</td>
</tr>
<tr>
<td>2.</td>
<td>Color</td>
<td>5 minutes</td>
</tr>
<tr>
<td>3.</td>
<td>Moisture</td>
<td>15 minutes</td>
</tr>
<tr>
<td>4.</td>
<td>Insolubles</td>
<td>10 minutes</td>
</tr>
<tr>
<td>5.</td>
<td>Unsaponifiables</td>
<td>3 hours</td>
</tr>
<tr>
<td>6.</td>
<td>Refined and bleached</td>
<td>2 hours</td>
</tr>
<tr>
<td>7.</td>
<td>Polyethylene</td>
<td>2 hours</td>
</tr>
<tr>
<td>8.</td>
<td>Titer</td>
<td>4 hours</td>
</tr>
<tr>
<td>9.</td>
<td>Bleach test</td>
<td>25 minutes</td>
</tr>
<tr>
<td>10.</td>
<td>Rate of filtration</td>
<td>30 minutes</td>
</tr>
<tr>
<td>11.</td>
<td>Refining loss</td>
<td>6.5 hours</td>
</tr>
<tr>
<td>12.</td>
<td>Iodine value</td>
<td>2 hours</td>
</tr>
<tr>
<td>13.</td>
<td>Saponification value</td>
<td>3 hours</td>
</tr>
<tr>
<td>14.</td>
<td>Fatty acid profile</td>
<td>30 minutes</td>
</tr>
<tr>
<td>15.</td>
<td>Protein</td>
<td>2 hours</td>
</tr>
<tr>
<td>16.</td>
<td>Fat</td>
<td>2.5 hours</td>
</tr>
<tr>
<td>17.</td>
<td>Ash</td>
<td>2.5 hours</td>
</tr>
<tr>
<td>18.</td>
<td>Protein digestibility</td>
<td>28 hours</td>
</tr>
<tr>
<td>19.</td>
<td>Yield test</td>
<td>8 hours</td>
</tr>
<tr>
<td>20.</td>
<td>Alkalinity, phenolphthalein</td>
<td>20 minutes</td>
</tr>
<tr>
<td>21.</td>
<td>Alkalinity, methyl</td>
<td>20 minutes</td>
</tr>
<tr>
<td>22.</td>
<td>Chlorides</td>
<td>20 minutes</td>
</tr>
<tr>
<td>23.</td>
<td>Sulphite</td>
<td>20 minutes</td>
</tr>
<tr>
<td>24.</td>
<td>pH</td>
<td>5 minutes</td>
</tr>
<tr>
<td>25.</td>
<td>Phosphate</td>
<td>20 minutes</td>
</tr>
<tr>
<td>26.</td>
<td>Total dissolved solids</td>
<td>5 minutes</td>
</tr>
<tr>
<td>27.</td>
<td>Hardness</td>
<td>15 minutes</td>
</tr>
<tr>
<td>28.</td>
<td>Aflatoxin</td>
<td>30 minutes - 3 hours</td>
</tr>
<tr>
<td>29.</td>
<td>Pesticide residue/PCBs</td>
<td>8 hours</td>
</tr>
<tr>
<td>30.</td>
<td>Chick edema</td>
<td>8 hours</td>
</tr>
<tr>
<td>31.</td>
<td>Microscopic check</td>
<td>15 minutes</td>
</tr>
<tr>
<td>32.</td>
<td>Microscopic test (complete)</td>
<td>4 hours</td>
</tr>
<tr>
<td>33.</td>
<td>Gossypol</td>
<td>3 hours</td>
</tr>
</tbody>
</table>
are separated due to their differing solubility in the liquid phase of the column. The fatty acids elute from the column and are burnt in a hydrogen flame. The increased electric activity generated by the incineration is recorded and the percent fatty composition of the fat calculated.

With the development of column technology, the fatty acid composition can be determined within 20 minutes of the sample being taken.

**Total Fatty Acids**

Fat quality is determined by energy value, stability, and freedom from extraneous materials. Total fatty acids (TFAs) are comprised of both free fatty acids and those combined with glycerol (intact glycerides). Fat is composed of approximately 90 percent fatty acids and 10 percent glycerol. Glycerol contains about 4.32 calories per gram compared with 9.40 calories per gram for fatty acids. Since fatty acids contain over twice the energy of glycerol and are the primary energy source in feeding fats, the TFA content acts as one indicator of energy. TFA levels less than 90 percent reflect dilutions with other ingredients and the value should be discounted on total fatty acid content.

**Lead**

The U.S. Food and Drug Administration specification for lead is 7.0 ppm. Lead is considered to be a toxic substance in concentrations greater than this level. The methods of analysis are by atomic absorption, inductive-coupled plasma analysis, or by ultraviolet spectrophotometry.

**Peroxide Value**

The peroxide value (PV) method is a common way of assessing fat rancidity. Rancidity is primarily caused by oxidation with hydroperoxides being the first oxidation products formed. The PV method measures their formation by determining the amount of iodine liberated from their reaction with potassium iodide and expressing the result in milli-equivalents per kilogram (meq/kg). Hydroperoxides are further oxidized to aldehydes and ketones, which are responsible for the changes in odor and flavor of rancid fats. The human threshold for detecting these changes seems to correspond to a PV of about 40 meq/kg. If a fat has a PV less than 40 meq/kg and does not smell rancid, it is most likely in the initial stages of oxidation and can readily be used in feed rations. If the PV is less than 40 meq/kg and the fat smells rancid, it is likely in its later stages of oxidation.

**Conclusion**

While the above are industry standards and recommendations, biodiesel producers looking to buy rendered fats should know the specifications required by their particular process and communicate those requirements to the supplier, who may be able to supply products lower than the maximum value at an appropriate premium to the published commodity prices.

Commodity prices are for those products typical or even at the limits of the ranges and may not reflect prices for better than average values.

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St. Joseph, Missouri
Canadian Renderer Powers Fleet on Its Own Biodiesel – in the Middle of Winter

Rothsay, one of Canada’s largest renderers and the country’s first commercial biodiesel producer, is now powering its largest truck fleet, based in Dundas, ON, with a five percent blend (B5) of biodiesel produced at its Montreal biodiesel facility.

Rothsay produces approximately 9.2 million gallons (35 million liters) of biodiesel annually made entirely from rendered materials such as waste restaurant grease and beef, pork, and poultry fats. The 369,800 gallons (1.4 million liters) of biodiesel that will be consumed annually by the 40-truck Dundas fleet is equal to taking 30 cars off the road.

“This is a major step forward for sustainability at Rothsay,” said Todd Moser, vice president of Rothsay Biodiesel. “Not only will we decrease our environmental footprint by reducing the amount of carbon dioxide released from our 40 trucks, but we’re fueling them with our own biodiesel fuel produced from animal by-products and recycled restaurant grease.” Biodiesel reduces emissions when burned and has a much lower level of carbon monoxide and carcinogenic hydrocarbons than petroleum diesel. Biodiesel can be used in all diesel engines without modification.

The renderer has been fueling its Montreal fleet with biodiesel since 2002, and with the addition of its Dundas fleet, Rothsay trucks will consume more than 528,000 gallons (two million liters) of biodiesel at a B5 level throughout 2009. With minor modifications to the fuel system, the company is also running 100 percent tallow-based biodiesel in two trucks at the Montreal facility. Rothsay’s biodiesel exceeds all North American and European quality specifications.

“Our biodiesel is clear and nearly colorless, which indicates the highest level of purity,” said Moser. “Biodiesel made from rendered materials contains very high cetane levels, which are important for more complete combustion and superior engine performance. It also has very high oxidation stability, which is important for storing fuel.”

Rothsay has managed to produce its high-quality biodiesel despite cold-weather conditions – the outside temperature at its Montreal plant, located on the St. Lawrence Seaway, can regularly reach minus 22 degrees Fahrenheit. The fuel exceeds the requirements of the new cold soak test now included in the North American specification for biodiesel, ASTM D6751, which addresses cold-weather operability issues.

Although all biodiesels are challenging in cold climates, proper handling can help overcome potential issues. Rothsay has not experienced any temperature-related issues with its biodiesel, even through the most frigid conditions, proving that rendered product-based biodiesel is a viable renewable fuel solution for all seasons.

California Releases Biodiesel Evaluation

Because biodiesel blends are new fuels, the California Air Resources Board (CARB) must provide a “multimedia assessment” of their potential impacts before adopting new fuel specifications (as required by California Health and Safety Code, Section 43830.8). Further, CARB cannot adopt any regulation establishing a motor vehicle fuel specification unless a multimedia evaluation is conducted to determine whether the regulation will cause a significant adverse impact on public health or the environment.

CARB has just released the California Biodiesel Multimedia Evaluation Tier I Report prepared by the University of California, Davis, and the University of California, Berkeley.

The report summarizes previously-studied health, safety, and sustainability values for biodiesel. The report is available online at www.arb.ca.gov/fuels/multimedia/multimedia.htm.

Canadian Province One Step Closer to Mandate

Manitoba has established fuel quality standards for the production of biodiesel as the province moves forward with plans to establish a biodiesel mandate. The Manitoba Biofuels Act went into effect December 15, 2008, and establishes requirements for obtaining a license to manufacture biodiesel; reporting and keeping records by license holders; fuel-quality standards for biodiesel and blends of biodiesel and petroleum diesel fuel; and penalties for failing to comply with a biodiesel license.

Under the biodiesel regulation, manufacturers intending to sell biodiesel in Manitoba or produce 15,000 liters (about 4,000 gallons) or more of biodiesel annually will be required to have a commercial license. Small-scale manufacturers producing less than 15,000 liters a year for their own use will be required to apply for a non-commercial manufacturing license.

Connecticut Awards $3.1 Million in Grants

A total of $2.2 million in grants was awarded to four Connecticut biodiesel production facilities and is expected to leverage at least $6 million in private investment. The state also awarded three Connecticut universities a total of more than $900,000 in grants to test biofuel quality and study different production methods and feedstocks.

Greenleaf Biofuels, LLC, will receive $1.28 million to help fund construction and equipment costs for a New Haven Harbor biodiesel
facility with an estimated production capacity of 6.7 million gallons per year. The plant will use multi-feedstocks, including waste and virgin vegetable oils, to produce biodiesel for the heating oil and transportation markets.

DBS Energy, Inc., intends to use its $503,844 grant to fund construction and equipment costs of its biodiesel-to-electricity production facility in East Hartford. The facility will process waste and virgin vegetable oils into biodiesel for use in diesel generators for peak electricity demand. The plant will utilize processing technology developed at the University of Connecticut to process 250,000 gallons of biodiesel per year.

CT Biodiesel, LLC, will apply its $350,000 grant to construction and equipment costs of its 50 million gallon per year biodiesel production facility in the New Haven Harbor area. The plant will utilize an array of feedstocks ranging from soybean oil to waste vegetable oil for biodiesel to be used as heating oil, transportation fuel, and electric generation fuel.

BioDiesel One, Ltd., will invest its $83,566 grant in further process automation and quality control equipment at its three million gallons per year biodiesel production facility in Southington. The plant also has the capacity to use multiple feedstocks.

The University of Connecticut will receive two separate grants. One for $598,244 will be used to develop the capability for remote monitoring and to build a biodiesel testing laboratory, while a second $97,000 grant will be used to conduct research on catalysts for conversion of biomass into biofuel.

The University of New Haven will receive $135,276 to identify species of algae from Long Island Sound that could be cultivated to produce biodiesel. Yale University will receive $69,752 to research algae feedstock growth optimization.

Aid to producers comes from the Production Facility Grant Program, and grants to the universities were awarded through the Fuel Diversification Grant Program. Both programs are administered by the Connecticut Center for Advanced Technology and funded by the state’s Department of Economic and Community Development.

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Biofuels Continued from page 21

HydroGenetics Acquires Buffalo Biodiesel

In early January, alternative energy company HydroGenetics acquired Buffalo Biodiesel, Inc., a collector and recycler of used cooking oil to produce biodiesel, which is headquartered in Northern New York. Under the terms of the contract, Buffalo Biodiesel becomes a wholly-owned subsidiary of HydroGenetics. Sumit Majumdar will retain his position as president of Buffalo Biodiesel.

Michigan Passes Biofuels Laws

Michigan Governor Jennifer Granholm has signed legislation that will advance the state’s efforts to expand the production and use of renewable fuels in Michigan. The 11 bills were part of a series of recommendations from the state’s Renewable Fuels Commission, established in 2006.

Public Act 313 of 2008 requires the Michigan Department of Agriculture (MDA) to develop rules regulating the quality and purity of biodiesel. Public Acts 321 and 322 of 2008 create a new Renewable Fuels Fund to promote the production and use of alternative fuels in Michigan. State residents will have the option to contribute to the fund through a new checkoff on the state income tax form.

Following are other bills signed by the governor:

- Public Act 329 of 2008 adds five additional renewable fuels renaissance zones in Michigan, bringing the total to 15. Renaissance zones are specific geographic areas designated as tax exempt to encourage economic development. Additionally, the new law requires that five of the state’s renewable fuels renaissance zones be designed for facilities that focus primarily on cellulosic biofuels production.
- Public Acts 314, 332, and 334 of 2008 create tax incentives for the use of agriculture machinery that can harvest both grain and biomass. These bills encourage farmers to invest in equipment that will allow them to harvest their crops while also collecting biomass residue from the crop or grain that can be used in alternative fuel production.
- Public Act 320 of 2008 requires the Michigan Economic Development Corporation to publish an inventory of available sites for renewable fuel plants.
- Public Act 330 of 2008 requires the MDA to compile public information about establishing an alternative fuel production facility in Michigan.
- Public Act 335 of 2008 provides a Michigan business tax credit for gas stations that convert existing gasoline pumps to biofuels pumps.
- Public Act 333 of 2008 extends the sunset on the Renewable Fuels Commission to 2012 and asks the commission to report on the location of alternative fuel producers in Michigan, the amount of alternative fuel sold, and the economic impact of the industry.

Missouri Man Sentenced for Dumping Biodiesel Waste

After entering a guilty plea in July 2008 for Clean Water Act violations, James Raulerson was sentenced in late November to two years probation and a $10,000 fine for discharging glycerin, methanol, and oil into a Missouri waterway.

In October 2007, an anonymous call was received by the Missouri Department of Conservation stating that a tanker truck was observed backed up to and discharging its contents into Belle Fountain Ditch in Hermondale, MO. Upon arrival at the site, state and federal emergency responders discovered that an undetermined amount of decomposing glycerin that was generated from Natural Biodiesel Plant, LLC, was released into the ditch. Missouri Department of Conservation monitored the effects of the release and estimated at least 30,000 fish and other aquatic life were killed.

KFC “Excited” to Recycle Used Cooking Oil

The average KFC restaurant produces about 500 pounds of used cooking oil each month, and the fast-food chain’s owners are looking to convert the waste product into biodiesel.

Yum! Brands, Inc., parent company of KFC and other fast food giants such as Taco Bell and Pizza Hut, released its first Corporate Responsibility Report in early December that examines the company’s social, environmental, and economic impact. Converting used cooking oil into biodiesel is one area the company is “particularly excited about” in the report. Currently, most KFC restaurants work with collectors such as renderers in their communities to dispose of the waste oil.

The report states that Yum is working to convert the grease into alternative fuels. It highlights one franchise in Nagano City, Japan, that is powered by biodiesel produced from its own waste oil. KFC restaurants in the United Kingdom also are already recycling their used cooking oil into biodiesel. The report does not go into specifics about the program, but a company spokesperson is quoted in a Louisville, KY, news article that the campaign likely would be tested first, possibly in Kentucky, before being expanded market by market.

Oxidation Stability in Long-term Storage Studied

Kemin Industries, Inc., and Renewable Energy Group (REG) have released the results of a research collaboration that offers a better understanding of oxidative stability and degradation of multi-feedstock biodiesel in long-term storage.

During a 10-week research collaboration, the Iowa-based companies conducted in-depth analyses of biodiesel’s oxidative stability characteristics.

“We looked for the identification of oxidation marker compounds, development of optimal dosing strategies, and researched ‘inoculation effect,’ which is the act of loading pristine biodiesel into storage tanks that contain residue amounts of poor quality material,” said Dr. Jennifer Radosевич, Kemin’s vice president of research and development.

REG provided the biodiesel utilized in the study. At 43 degrees Celsius, over 10 weeks, experts analyzed B100 made from 100 percent soybean oil and B100 whose feedstock included a combination of vegetable oil and animal fats. In testing used to simulate extreme storage conditions, results showed that oxidative stability decreased rapidly in untreated B100.

“Antioxidant treatment delayed
these changes,” explained Glen Meier, REG’s manager of research and development. “Results show that dosage rates will depend on the specific biodiesel product and its feedstock composition as well as the storage and handling protocols in place.”

Collaborators also stated that late “rescue” treatments did not eliminate secondary oxidation products even when induction time could be increased. As was consistent with other recent reports on biodiesel stability, Kemin and REG found that oxidation in products measured indicate changes to the B100 that may foster polymer and sediment formation in blends and support earlier use of antioxidants to preserve quality.

“One of the goals in this long-term research collaboration is to help petroleum distributors prevent oxidative stability issues when handling or storage situations are not ideal,” said Radosevich. REG and Kemin intend to continue the partnership to further advance understanding of biodiesel oxidative stability and conduct educational and promotional activities in order to help educate petroleum distributors and biodiesel consumers on the best practices for enhancing oxidative stability.

Repairs to Fire-damaged Nova Plant Complete

Nova Biosource Fuels, Inc., has completed repairs to its biodiesel facility in Clinton County, IA, after a fire erupted in late September while the plant was idled for routine maintenance. The cost of the repairs was less than $100,000 and Nova’s goal was to restart the refinery in mid- to late-January. A review of the fire protection systems and procedures has been conducted to ensure proper functioning.

The fire is believed to have been started by a build-up of methanol vapors in a column during a ventilation process that is required as part of maintenance.

Seattle Biodiesel Fined for Spill

The Washington Department of Ecology has fined Seattle Biodiesel, LLC, $20,000 for an oil and chemical spill to the Duwamish River in 2007.

An overflow occurred July 27, 2007, at the company’s biodiesel pro-duction facility on First Avenue while an employee pumped a processing chemical mixture of vegetable oil, biodiesel, sodium hydroxide, methanol, and glycerin from a large tank to a small portable tank. The mixture flowed across a driveway into a small inlet along the Duwamish River. About 620 gallons of the mixture reached the waterway, of which all but 23 gallons was recovered. There were no reports of fouled birds or fish killed as a result of the spill. The cleanup ended August 3, 2008.

Seattle Biodiesel reported the spill promptly and hired a cleanup firm to contain the spill and clean oil from the water and shoreline. The spill was confined to the small inlet. The water-soluble glycerin, methanol, and sodium hydroxide dissipated into the river.

An investigation determined that an employee didn’t properly monitor the transfer from the 6,000 gallon tank to the 300 gallon container. Seattle Biodiesel immediately took measures to improve the oversight and control of oil transfers at the facility. The company has since discontinued manufacturing biodiesel at the site and uses the facility for research.
What a Difference a Year Makes

The above saying couldn’t be any truer than now as we begin a new year. Since a year ago, there have been dramatic changes both politically and economically.

It is difficult to look into the crystal ball and predict the future with any assurances. It will be a challenging year for the National Renderers Association (NRA), as it will be for its member companies. But I am regularly reminded that with challenges come opportunities.

Politically, we face a new Democratic administration in Washington, DC, after eight years of Republican leadership. This means getting acquainted with a new cast of players in the various departments and agencies that impact the rendering industry. Most individuals have not even been appointed yet. Once the cabinet appointments are complete, there are literally hundreds of other political appointments at the subcabinet and agency levels that need to be made. It will be well into the spring before many of these people will be in their new positions.

The uncertainty will be learning the Obama administration policy priorities and how they will be implemented. There was a lot of rhetoric during the presidential campaign and already there are some campaign promises that are not likely to be kept. The reality is that campaigning is a lot different from governing.

The good news is that the rendering industry has a positive story to tell. We truly are the original recyclers. We make a positive contribution to society. The NRA’s task is to get the industry’s story in front of the policy and decision makers. With the success of NRA’s annual Washington fly-ins, we have enjoyed a good relationship with both Democrats and Republicans in Congress. We will build on these relationships with the new 111th Congress.

The new Obama administration will come forth with several ambitious initiatives. The first will be a stimulus package that is expected to cost close to a trillion dollars. Much of the details were not known at press time, other than some proposed tax cuts. It will be interesting to see if Congress attempts to lade it with additional pork barrel and earmarked programs than what President Barack Obama proposes. Alas, Congress just can’t help itself and will try.

With the enormity and projected price tag it is uncertain just what will be included in the stimulus package that will impact renderers. Will it include additional incentives for alternative fuels? Will it affect existing programs like the U.S. Department of Agriculture Foreign Market Development and Market Access Programs, which are so beneficial to the NRA’s international marketing activities?

After a stimulus package, initiatives in health care, energy, and climate change can be expected, for starters. Every new administration must move quickly on its priorities if it wants to succeed. After the first year, members of Congress get re-elected and these grand initiatives aren’t so grand anymore so it is important for Obama to move quickly on these programs if he wants results.

A carryover issue from last year is the implementation of the changes to the Food and Drug Administration (FDA) feed rule. The new changes go into effect on April 27, 2009. While the NRA opposed these changes vigorously, the FDA prevailed and published the rule as final in April 2008. With this reality, NRA set out to work with its members and the FDA in an attempt to make the implementation of the rule workable. There was good cooperation on both sides and many of the industry’s questions and concerns have been addressed.

The one sticking point in the rule is the handling of cattle over 30 months of age that die on the farm. In order for these animals to be rendered, the brains and spinal cords must be removed and segregated from other rendered materials. Renderers are making individual company decisions based on their own circumstances on how to address dead stock over 30 months of age. These decisions are being made based on economics, geography, and the practicality of removing these materials from the animal.

Many renderers have already notified their customers what they intend to do to comply with the new rule. In cases where the renderer has decided to either discontinue picking up dead animals over 30 months of age or discontinue picking up dead animals altogether, there has been a considerable outcry from farmers, markets, and other customers. While we have been opposing this rule for over three years, many are just learning of it and its implications.

However, many renderers are already implementing or exploring ways to process animals over 30 months of age that includes the removal of the brains and spinal cords.

Renderers generally are trying to work with their customers in providing some form of disposal service even if it means collecting the dead stock and taking it to a landfill instead of rendering. But, of course, these services will come with an added cost and it is not yet certain how much the owner of the dead stock is willing to pay for the service.

The bottom line is that the primary burden for compliance with the new rule falls on the renderer, providing a hardship to many of them. It is not easy to make a decision on the best way to comply. It will take several months to see how the new rule will work and what impact it will have on the rendering and livestock industries. It is the intent of renderers to continue to provide their services in a manageable and economical manner.

As stated earlier, challenges often bring opportunities. The rendering industry will be tested this year, but I am confident we will rise to the occasion. R
Mark Your Calendar

February

Aquaculture America 2009, February 15-18, Seattle, WA. Log on to www.was.org.

Pacific Coast Renderers Association 77th Annual Convention, February 19-22, Carmel Valley, CA. Contact Jeanette Caio at (415) 441-2121, or e-mail caitosf@mcn.org.


March

Western United Dairymen’s Annual Convention, March 4-6, Rohnert Park, CA. Log on to www.westernuniteddairymen.com/html/convention.html.


Biodiesel Technology Workshop, March 16-20, Moscow, ID. Log on to www.ucs.iastate.edu/mnet/biodiesel/home.html, or call (208) 885-7891.

Brazilian Expo Render, March 26-27, Sao Paulo, Brazil. Log on to www.fenagra.com.br/conteudo/english.html, or e-mail daniel@editorai9.com.br.

April

National Grain and Feed Association 113th Annual Convention, March 29-31, Orlando, FL. Log on to www.ngfa.org/conventioninfo.asp.


National Renderers Association (NRA) Spring Meeting, April 21-24, Clemson University, Clemson, SC. Call NRA at (703) 683-0155, or e-mail co@martycovert.com.

May

100th American Oil Chemists’ Society Annual Meeting and Expo, May 3-6, Orlando, FL. Log on to www.aocs.org/meetings.


International Animal Health and Nutrition Symposium, May 17-20, Lexington, KY. Log on to www.alltech.com, or e-mail symposium@alltech.com.


June

National Renderers Association Central Region Meeting, June 3-5, Fontana, WI. Contact John Setchell at (815) 539-5633, or e-mail johns@mendag.com.

World Pork Expo, June 3-5, Des Moines, IA. Log on to www.worldpork.org.

View a complete list of upcoming industry meetings at www.rendermagazine.com
South America is beginning to emerge as a major biodiesel producer utilizing various raw material sources. Whereas South America is blessed with an abundance of agricultural products, many of its countries have lagged behind the European Union and the United States regarding laws aimed at promoting and developing their biodiesel industries. However, these laws are now being developed or have been developed within the last couple of years. This has allowed for the commercial production of biofuels, and the industry is expanding quickly. In fact, the region as a whole is rivaling North America’s biodiesel industry in total production. Following is a brief overview of the major biodiesel producers in South America.

**Paraguay**

As with many developing nations, Paraguay views biofuel production as a way to help develop its struggling rural areas and become more self-reliant for its energy needs. Paraguay is 100 percent reliant on imported oil, and 75 percent of its fuel consumption is diesel. The first biofuel legislation was passed in 2005 that, among other things, established minimum blend requirements of one percent biodiesel in diesel fuel by 2007, three percent by 2008, and five percent by 2009. The maximum blending rate at fuel stations is established at 20 percent. In May 2008, the government reduced the value added tax (VAT) on biodiesel to two percent and eliminated the import duties on both new and used flex fuel vehicles in an effort to help spur the use of biodiesel.

Currently there are seven biodiesel plants operating in Paraguay, with two of the plants being owned by two major slaughterhouses. Approximately 67 percent of biodiesel is produced from animal fats, and two jatropha plantations are being developed for future feedstocks. It is estimated that the total production capacity is 11.9 million gallons (39,600 metric tons), but production in 2007 was estimated at five times that needed to meet the demand established by the blending mandate. Hence, in July 2008 the mandatory blend was increased to three percent in an effort to offset the excess production capacity.

Brazil has 56 biodiesel plants authorized by the government to produce biodiesel, with new projects awaiting approval. Eighty percent of the feedstock used for biodiesel is soybean oil and 15 percent is animal fats. Current capacity is approximately 1.1 billion gallons (3.8 million metric tons). Production in 2007 was estimated at 106.2 million gallons (354,051 metric tons) while 2008 production is estimated at 290.6 million gallons (968,797 metric tons). Unlike other countries in the region, it appears that Brazil will meet their minimum blending requirements for 2008.

**Colombia**

Colombia’s first biodiesel plant started producing in November 2007, with an estimated production capacity of 15 million gallons (50,000 metric tons) per year. A second plant with a capacity of 10.8 million gallons (36,000 metric tons) per year began production in April 2008. Two more plants were expected to come online in the second half of 2008.

Brazil has been a leader in biofuel production for many years starting with its production of ethanol after the fuel crises in the 1970s. Brazil’s biodiesel law developed in 2004 created the National Biodiesel Production and Use Program, which established a mandate of a minimum blend of two percent biodiesel in diesel fuel from January to June 2008. Production capacity is estimated at 3.6 million gallons (12,000 metric tons) and projected to be 10.5 million gallons (35,000 metric tons) in 2009.

**Uruguay**

Uruguay is developing its biodiesel sector to add value to its agriculture products, to become more self-sufficient, and to promote a cleaner environment. Uruguay’s biofuel law was passed in October 2007 and mandates a minimum blend of two percent biodiesel in diesel fuel from 2009 to 2011 and a five percent blend after 2011. Nearly 60 percent of the biodiesel production currently comes from tallow, with the remaining amount from soybean oil. There are five major biodiesel plants and a multitude of smaller plants that produce biodiesel for their own consumption. In 2008, Uruguay’s biodiesel production was estimated at 1.2 million gallons (3,963 metric tons). Of the five major biodiesel plants, two utilize tallow, two use soybean oil, and the final plant has ceased production due to high feedstock prices in 2008.

**Projected South American Biodiesel Production, 2008**

<table>
<thead>
<tr>
<th>Country</th>
<th>Gallons</th>
<th>Metric Tons</th>
<th>Raw Material Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>264,172,052</td>
<td>880,724</td>
<td>100% soybean oil</td>
</tr>
<tr>
<td>Brazil</td>
<td>290,589,258</td>
<td>968,797</td>
<td>80% soy oil; 15% animal fat</td>
</tr>
<tr>
<td>Paraguay</td>
<td>3,599,384</td>
<td>12,000</td>
<td>67% animal fat; 33% vegetable oil</td>
</tr>
<tr>
<td>Uruguay</td>
<td>1,188,774</td>
<td>3,963</td>
<td>60% animal fat; 40% soy oil</td>
</tr>
<tr>
<td>Columbia</td>
<td>38,569,120</td>
<td>128,586</td>
<td>100% palm oil</td>
</tr>
<tr>
<td>Total</td>
<td>598,118,588</td>
<td>1,994,070</td>
<td></td>
</tr>
</tbody>
</table>

Source: Derived from U.S. Department of Agriculture/Foreign Agricultural Service (FAS) attaché reports, and FAS/Global Agriculture Information Network reports.
to expand the palm-based biodiesel industry in order to begin exporting biodiesel. However, production has not even reached the level to meet local demand yet. Total biodiesel production in 2007 was estimated at 38.6 million gallons (128,586 metric tons), which fell short of meeting the five percent minimum blending mandate. Currently, production only provides 20 percent of the total needed to comply with the mandate.

Argentina

Argentina has been heralded as an emerging leader in biodiesel production and trade. The country’s biofuel law was passed in 2007 and mandates a minimum blend of five percent biodiesel by 2010. Even though the domestic mandate is important to create domestic demand, Argentina exports the vast majority of its biodiesel production, with 90 percent exported in 2007.

It was expected that by the end of 2008, more than 15 medium to large biodiesel plants would be online with an estimated capacity of 528.3 million gallons (1.8 million metric tons) and projected production of 264.2 million gallons (880,724 metric tons). The principle feedstock in Argentina is soybean oil with very minute quantities of used cooking oil being utilized. With the abundance of soybean oil in Argentina, the biodiesel industry is projected to continue its growth in the near future and is expected to have a production capacity of 1.1 billion gallons (3.5 million metric tons) by 2010.

Conclusion

South America has become a major producer of biodiesel. Argentina and Brazil account for nearly 93 percent of the production in South America and are projected to continue growing. Argentina exports over 90 percent of its biodiesel whereas Brazil utilizes the vast majority of its production domestically. So what does this mean for animal fats?

In total, a new market of close to two million metric tons for fats and oils has been created. Looking at animal fats specifically, it is estimated that close to 145,000 metric tons of animal fats were used in the production of biodiesel in South America in 2008. For example, in 2005 Brazil exported nearly 45,000 metric tons of tallow, whereas in 2008, it is estimated that Brazil’s tallow exports will be approximately 600 metric tons. In addition, Brazil imported over 7,000 metric tons of tallow from Uruguay and 4,000 metric tons from Paraguay in 2008. Overnight Brazil went from a net exporter of tallow to a net importer of tallow to meet its domestic demand.

There are many very aggressive predictions as to the future production of biodiesel in South America that won’t be mentioned here. However, one item to note is that Argentina’s production will continue to rely on export markets for biodiesel such as the European Union and the United States as long as 90 percent of its production is exported. Hence, events in these export markets can very quickly affect Argentina’s biodiesel industry. Brazil’s production will continue to rely on its apparent successful biodiesel laws and promotion by its government. Other countries in the region have not been as successful at meeting their minimum blend mandates and further support from their governments will be needed to insure the sustainability of their biodiesel industries. R

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The Animal Co-Products Research and Education Center (ACREC) is very pleased to welcome the 2009 National Renderers Association Spring Meeting to Clemson University. The event will be held at the Clemson University Madren Conference Center April 21-24, 2009. Showcased will be ACREC scientists and engineers as they explore innovative methods of controlling microorganisms, develop new applications ranging from biofuels to biodegradable plastics, and address other challenges and opportunities for the rendering industry as identified with input from Fats and Proteins Research Foundation members.

Following are some of the current ACREC faculty and their projects.

Dr. Xiuping Jiang, associate professor of food science, is investigating new methods for controlling *Salmonella* and other microorganisms in rendered animal by-products. Bacteriophages are unique viruses that can affect only certain species of bacteria. Jiang is seeking bacteriophages that will destroy *Salmonella*. Bacteriophages could be added to rendered products to protect against *Salmonella*, to incoming raw product to reduce *Salmonella* before it arrives at the rendering plant, and as an aerosol within the rendering plant to prevent recontamination of product and for worker safety. Bacteriophages have been used for bacterial control and as a form of therapy since long before the discovery of antibiotics. Bacteriophages are approved for food use and offer an alternative for reducing bacterial populations without the problems associated with antibiotic resistance.

Dr. Charles H. Gooding, professor of chemical engineering, is working to determine the carbon footprint of the rendering industry and its individual processes. Carbon footprint measures the amount of greenhouse gases emitted during a process or activity. The rendering industry has expressed a desire to have carbon footprint calculations conducted. Gooding is collecting data on rendering operations and will use this information in different approaches to carbon footprint calculation. He is developing a spreadsheet model for industry members to use for calculating the carbon footprint of particular processing units.

Dr. David Bruce, Department of Chemical Engineering, is studying the energy life cycle of biodiesel produced from animal fats. His team is comparing the costs of making biodiesel in terms of energy inputs. With vegetable-based fats, biodiesel production costs must include the energy inputs to grow and harvest the vegetable crops. With animal fats, the primary goal of raising the animal is for meat, milk, or egg production. The project is validating that biodiesel produced from animal fats uses less energy than biodiesel produced from vegetable crops. This project is of benefit to the rendering industry for marketing efforts in “green energy” as well as for government support of biofuels issues.

Dr. Thomas Jenkins, Department of Animal and Veterinary Sciences, is investigating improvements to tallow for use as a dairy feed ingredient. As milk production increases in the dairy cow, the need for fat in the diet increases. Use of tallow as a fat source in dairy rations is limited because tallow is a rumen-active fat source, which at high levels can interfere with fermentation within the rumen. Jenkins and his team are working to convert tallow into a form that can be protected in the rumen to make it a more valuable fat source for dairy animal feeds. He also is working to improve the fluidity of the material to make it more easily handled. Jenkins’ project could significantly increase the value of tallow as a feed supplement.

Dr. Feng Chen, associate professor of food science, is working to find natural antioxidant materials from rendered animal products. He has discovered that he can create peptides that have a very strong antioxidant capacity. This is of great importance to the rendering industry as a potential protective agent for animal fats in feeds. By utilizing animal protein-derived antioxidants, this project could offer tremendous cost savings to renderers for antioxidant protection of rendered fats as well as a new high-value market product from rendered proteins.

Associate Professor Igor Luzinov, a polymer chemist in Clemson University’s School of Materials Science and Engineering, leads a team that is working to make plastics from animal by-products. The researchers have been successful in creating biodegradable plastics from feathers and blood and have created prototype products such as golf tees. Now they are working to increase the strength and to make the plastics more “mechanically robust.” Luzinov and his team also are investigating the use of other animal by-products, including meat and bone meal, for making biodegradable plastics. They recognize that use of rendered proteins as a new generation of biodegradable plastics could become a large, valuable market for millions of tons of material.

Professor James G. Goodwin Jr., chairman, Department of Chemical and Biomolecular Engineering, and his team are investigating improved procedures for most efficiently and economically generating biodiesel from recycled grease and animal fats using new catalysts and elevated operating temperatures. He has developed a three-phase reaction system in which the solid-phase catalyst, liquid-phase fat, and gaseous-phase alcohols react. Goodwin’s research could yield cost savings of 25 cents per gallon or more on production of biodiesel from animal fats. In addition, with his system, the high free fatty acid content of animal fats would not cause problems with soap formation but, in fact, would be beneficial for use in the system.

Dr. Thomas Scott, professor of animal and veterinary sciences, and his team are studying bioactive supramammary
lymph node proteins and growth factor activity. The team discovered that proteins from these rendered products can have unique biological activity and can be used in tissue culture media to grow cells for medical research. Scott and his students have tested the potency of their isolated extract on an array of cells, including human breast cancer and antibody producing cells, and found that it works better than the expensive bovine growth serum that is now used ($36-$72 per 100 milliliters). The product could have valuable market application.

Dr. Amod Ogale, professor of chemical engineering, is investigating ways to create new geostuctural polymers from animal by-products. His team has been successful in creating a variety of new plastics using melt-processing to extrude and mold feather meal into sheets. The preliminary results of their study indicate that large geostuctural sheets of plastics may be made. Potential uses for such materials could include reinforcements for temporary roads or erosion control fencing for construction projects. This project could yield a new market for millions of tons of rendered proteins as high value polymer precursors.

Dr. Paul Dawson, a professor in the Department of Food Science and Human Nutrition, is working to isolate antimicrobial compounds from animal by-product extracts. Dawson and his team are testing these extracts on a variety of bacterial strains to determine if any antimicrobial properties exist. As an antimicrobial substance, these materials could be worth thousands of dollars per pound.

ACREC Director Dr. Annel Greene is working with Scott, Dr. William Bridges Jr., Experimental Statistics, and Dr. Adam Leaphart, Clemson University’s Veterinary Diagnostic Laboratory, to investigate the heat dosage required to destroy the avian influenza (AI) virus in raw materials. This study is aimed at ensuring the health and safety of humans and animals exposed to feeds in case of an outbreak of the deadly virus. This information will be crucial to the rendering industry in the event of an AI outbreak and will be beneficial to regulatory agencies. Publication of the experimental data should help to mitigate rendered product market volatility in an AI crisis.

Clemson, SC, is beautiful in spring, with lush vegetation and blossoms, and great golf and outdoor activities. Nestled in the foothills of the Blue Ridge Mountains, the upstate area of South Carolina is home to a wide array of historic locations including antebellum homes and Revolutionary and Civil War sites. The Hanover House, a French Huguenot home built in 1716, stands in the South Carolina Botanical Gardens, located on the Clemson University campus.

Fort Hill, the antebellum plantation home of John C. Calhoun, is located in the center of campus and open daily for tours. The home is listed as a National Historic Landmark and is furnished with important original antiques including an authentic Duncan Phyfe dining table, a mahogany sideboard constructed with wood from the USS Constitution, and a side chair once owned by George Washington. Calhoun served as vice president to Presidents John Quincy Adams and Andrew Jackson, secretary of war to President James Monroe, and secretary of state to President John Tyler. Calhoun’s son-in-law, Thomas Green Clemson, bequeathed Fort Hill Plantation to South Carolina for the formation of what is now Clemson University and the home of ACREC.

We invite you to join us in April at Clemson for discussions and interaction to improve the research effectiveness for the rendering industry.
Top 10 Trends to Watch in 2009

A year ago, I described what I thought were the “Top 10 Trends to Watch in 2008” (see February 2008 Render). In many ways, 2008 was a very special year with soaring highs and depressing lows. I have revisited the list and once again made educated guesses on impacts to the U.S. rendering industry in 2009.

Most of these are long-term impacts that are not dispatched in one year, even a foundation-shaking year like 2008. However, the impact of today’s economy is now the overriding factor in almost every conversation. Rather than add a new “number one” and move everything else down a notch, let’s go through the list and see how each item may change in the new shaky economic world, otherwise known as a global recession. I won’t quibble with the order and ranking, it may be a little different for each of us, but few can escape the impact of the following.

1. Increased ingredient scrutiny: As producers, processors, and others in the feed/food chain struggle with economic survival, there will be pressures to cut corners, defer maintenance, buy cheaper ingredients, and take chances. The pressures on animal feeds from recalls, customer expectations, and traceability requirements will likely intensify. This will continue to increase pressure for disease control, validation of methods, equipment monitoring, and a higher level of quality control.

There will be closer scrutiny on commodities and ingredients. The North American Rendering Industry Code of Practice program will continue to positively impact the safety, quality, and reputation of rendered products. Some will be tempted to forgo this cost, but that may be shortsighted.

2. Challenges from “organic” and “natural” food programs: The market share of these niche programs may not grow in times when consumers are cutting spending. The sales of these higher-cost products may flatten or even drop in 2009, but the longer term trend will likely survive. Properly processed meat and bone meal, feather meal, and blood meal have long been considered high quality proteins and using these products in meat production is necessary for meat production to be sustainable. The rendering industry should consider 2009 as a bit of a breather in order to catch up with this trend. Improvement needs to continue through the code of practice and similar programs, so when the economy improves and these product lines resume their growth, rendered products are included.

3. The “Greening of America”: This is another trend that will slow down in some circles because of cost, but may accelerate in other circles because of politics or emphasis in economic stimulation. The rendering industry needs to stay on top of it and explain the positive role of rendering.

Without renderers, it would be necessary to discard or dispose of animal by-products and mortalities in community landfills, compost piles, burial sites, incinerators, or, worse, left in illegal dumping places, causing a potential public health hazard. Each of the alternative methods has several limitations with respect to animal by-product and mortality disposal, with limited space being the most obvious. The new Food and Drug Administration feed rule prohibiting certain cattle materials from animal feed will awaken some sectors to this dilemma.

At the same time, renderers will be expected to control odor and meet more stringent rules on emissions as well as more stringent wastewater treatment limits.

4. Energy costs: It did not take a rocket scientist to predict that energy would be a key impact for rendering in 2008, and some correctly declared that crude oil at $140 a barrel was a “bubble,” but nobody saw a 70 percent drop in fuel costs. The new markets and increased values for fats and oils going into biodiesel quickly disappeared. This latest cycle of low energy prices is likely to be short-lived, particularly when the economy picks up again.

Attention to conservation and plant management will be important. We have not seen the end of high energy prices, so be prepared. We have also not seen the end of price cycles in energy or any other commodity, so be prepared also for volatility.

5. Same old “not in my backyard” speech: Rendering is commonly misunderstood and unwelcome in many places as “not in my backyard” pressures continue. Emphasis needs to be on the essential nature of the business as well as economic impact for livestock producers, etc. Good neighbor policies are effective, and the rendering industry will have to work hard to meet environmental expectations while positioning as a solution for broad biosecurity challenges of society and animal agriculture. The economy is not likely to have an impact on this attitude; certainly any relief on this front will be short-lived.

6. A new administration is now in charge: One of the longest lasting, most impactful events of 2008 was the presidential election. So far, Barack Obama has shown himself to be pragmatic and centrist in cabinet picks. He plans to launch the biggest economic stimulus package ever, and this could selectively impact sectors such as environmental technology more heavily than others. As Congress searches for ways (other than debt) to finance these initiatives, the current low energy prices may be a tempting backdrop in which to establish higher fuel taxes.

7. Research innovations: Research and development will continue to drive progress in the industry and will become more important in inevitable future tough times. In the big picture, research and innovation may actually be impacted in a positive way (or at least neutral) by the economy. Natural tendencies to pull back on research investment in tough
economic times will likely be offset by a commitment by the new Obama administration to innovation, particularly in environmental areas. However, it may be difficult to get direct benefit to rendering research from these initiatives, so direct investments by renderers will continue to be essential.

8. Gradual opening of trade for U.S. rendered products: This has recently been fueled by the global demand for protein and the growing Chinese economy. With commodity prices waning, renderers cannot depend on the rising demand and cost of feed proteins to overcome the non-tariff trade barriers – the convenient but unscientific animal and human health excuses countries use to prevent imports of U.S. and Canadian rendered products. The rendering industry will need to continue to push for fair trade and scientific determinations of safety to open markets. Efforts to open international markets will be even more important in this economy.

9. Increased usage of rendered products: Protein meals will continue to enter new markets such as aquaculture. Rendered proteins are a viable replacement for high priced fish meal that is mostly a result of fish availability in the oceans rather than the economy. The availability of raw materials hinges on continued growth of livestock industries, and those are being buffeted by volatile production costs and waning exports.

The total meat and poultry produced in the United States has grown over the long-term, but that trend may take a respite with the global recession. Raw material for rendering could peak temporarily as breeding herds are thinned, and then the livestock base for raw materials and feed demand will be smaller after production is reduced.

10. Workforce issues: The continued development of employment rules for both health and well-being reasons and immigration will pressure the rendering industry as well as its customers and suppliers. Congress may, at last, in the next few years come to a long-term solution to immigration that will create more stability in the workforce, but action may be delayed until other priorities are legislated. A higher unemployment rate may make it easier to find qualified workers, at least until the end of this recession. R
ADA Amendments: Enhanced Employer Obligations and Liabilities

Editor's Note – Mark A. Lies II is a labor and employment lawyer and partner with the Chicago, IL, law firm of Seyfarth Shaw, LLP. Legal topics provide general information, not specific legal advice. Individual circumstances may limit or modify this information.

As employers have known since the advent of the Americans with Disabilities Act (ADA), those employees who are “disabled” and are qualified to perform the essential functions of the job, with or without an “accommodation,” are protected from employment discrimination (e.g., refusal to hire, termination, demotion, etc.).

Since the inception of the ADA, there has been a significant amount of litigation over what constitutes a disability. For example, the court decisions ruled that employees might not be disabled if the disability (impairment) could be reduced or eliminated through the use of “mitigating measures” (e.g., prosthetic devices, medications to control certain health conditions like diabetes, bipolar disorder). With new amendments, the U.S. Congress has essentially negated this case law (some of which is specifically referenced in the amendments), so employers are now faced with having to address these issues with employees without such guidance. As a consequence, employers will need to retrain their human resources representatives and supervisors to address the amendments that became effective on January 1, 2009.

Amendments

The Americans with Disabilities Act Amendments Act of 2008 (ADAAA) moved through Congress swiftly and with strong bipartisan support. President George W. Bush signed the new law, which modified the ADA effective January 1, 2009.

The bill was supported by a broad coalition of civil rights groups, disability advocates, and employer organizations. Disability advocates and other civil rights groups sought to reverse U.S. Supreme Court decisions that had defined covered disabilities more narrowly than many of the ADA’s original congressional proponents had intended. Business groups, including the U.S. Chamber of Commerce and the Society for Human Resource Management, supported compromise bills in the House and Senate, recognizing that some new law was inevitable and working to craft the best deal possible for employers.

The ADAAA changes the way in which courts will evaluate whether an individual is disabled for ADA purposes in several significant ways.

Broad Construction

The new law specifically rejects several Supreme Court decisions that narrowly construed “disability” and ADA protections generally. Beginning in January 2009, for purposes of the ADA, “disability” is to be broadly construed and coverage will apply to the “maximum extent” permitted by the ADA and the ADAAA.

Substantially Limits

The new law squarely condemns previous, narrow judicial interpretations of “substantially limits.” Under the new law, courts are to focus on whether employers “have complied with their obligations” under the ADA. Thus, according to Congress, whether an individual has a disability should not “demand extensive analysis.” The ADAAA also instructs the Equal Employment Opportunity Commission (EEOC) to issue new regulations defining “substantially limits” so that the current definition (“significantly restricts”) is changed to something yet to be determined that comports with the ADAAA’s broader view. Employers will have to review and comply with these new regulations.

Mitigating Measures

In a complete reversal of Supreme Court precedent, the ADAAA rejects decisions holding that mitigating measures (e.g., medications, prosthetics, corrective surgery, hearing aids, and mobility devices) are to be considered in assessing whether an individual is covered under the ADA. Going forward, impairments are to be evaluated in their unmitigated state when determining whether the individual is substantially limited in a major life activity, except that ordinary eyeglasses and contact lenses may be considered.

Expansion of Major Life Activities

The ADAAA adds several new activities to the non-exhaustive list of major life activities covered by the statute. Specifically added were “sleeping...concentrating, thinking, [and] communicating.” Also included as major life activities are “the operation of major bodily functions” such as the “immune system, normal cell growth, digestive, bowel, bladder, neurological, brain, respiratory, circulatory, endocrine and reproductive functions.” All of these new major life activities create additional factors that employers will have to consider when making employment decisions.

“Regarded as” Analysis

The ADAAA significantly expands “regarded as” protection by prohibiting discrimination based on the employer’s alleged perception of a mental or physical impairment, even if that impairment is not a perceived or actual disability under ADA. This means, for example, that a 10-pound lifting restriction that might not rise to the level of an actual disability (under the major life activity of working or otherwise) can nonetheless be the basis
of a “regarded as” claim. Excluded from the “regarded as” prong of the definition of disability, however, are “minor and transitory impairments.” The ADAAA defines transitory impairments as those with an “actual or expected duration of less than six months.” It remains to be seen, however, whether an arguably major impairment with an expected or actual duration of less than six months or, conversely, a minor impairment lasting more than six months will suffice to protect individuals under “regarded as” analysis.

Additional Effects

There are additional provisions within the amendments, including:

• Extends ADA protections to individuals with episodic impairments or conditions in remission if the impairment would substantially limit a major life activity in its active state.
• Clarifies that there is no duty to provide reasonable accommodations to individuals who are ADA-protected under only the “regarded as” or “record of” prongs of the definition of disability.
• Clarifies that impairments need only limit one major life activity in order to constitute a disability.
• Clarifies that an individual without a disability cannot pursue a claim for reverse discrimination (on the basis of not having a disability).

Impact of ADAAA

The ADA’s expanded scope will likely result in millions of individuals not previously covered under federal law now having protection as individuals with disabilities. Moving forward, case law and other guidelines that interpreted the definition of disability under the prior law will be largely useless in determining who is covered under the new law. As a result, employers will be hard-pressed to get charges dismissed or summary judgments granted on the ground that an individual is not disabled. Thus, many employers will need to change their approach to medical conditions in the workplace, recognizing that common illnesses and impairments not previously considered to be disabling will now be ADA-covered disabilities.

This vastly broader universe of covered individuals will, in turn, shift much of the focus to “reasonable accommodation”; more precisely, whether an individual with a physical or mental condition is otherwise qualified to perform essential job functions, with or without reasonable accommodation. That means employers must reevaluate their job descriptions, job qualification standards, and reasonable accommodation procedures to ensure that they are current and defensible.

Perhaps the most troubling aspect of the ADAAA for employers is the new “regarded as” disabled language. Previously, the “regarded as” prong protected those perceived to have a substantially limiting impairment. Suppose an employee has a 10-pound lifting restriction that precludes him/her from a narrow range of manufacturing jobs. Under the old ADA, absent evidence of a broader stereotypical conclusion by the employer, that employee was not ADA-protected – he/she was not regarded as substantially limited as to working or any other major life activity.

Under the new ADA, if the employer takes action because of that restriction (for example, by assigning the employee to a lower-paying office job), the individual is ADA-covered, even though the employer formed no opinion regarding his/her ability to work generally. One upshot is new ADA protection for many employees with work-related injuries. Such situations previously managed through workers’ compensation schemes may now be viable ADA cases, with attendant exposure to compensatory and punitive damages.

Conclusion

In light of the new law, employers should review their various job qualification and reasonable accommodation standards in order to assure compliance. Further, employers must train human resources representatives and supervisors regarding these issues so that the employer can properly respond after January 1, 2009. Finally, it is critical that employers obtain and comply with the expected EEOC regulations.
Asia Regional Director for NRA Hired

The National Renderers Association (NRA) has appointed Dr. Peng Li as the director, Asia region, for the organization. He is originally from the city of Harbin in the province of Heilongjiang in Northern China.

Li earned a PhD in nutrition from Texas A&M University where he was a recipient of the Distinguished Doctoral Research Award, the highest student award at Texas A&M. Prior to receiving his doctorate, he worked for various research centers in China and earned his bachelor degree in aquaculture from the College of Fisheries Science, Ocean University of China.

Li’s academic background has focused on the disciplines of aquaculture nutrition, swine nutrition, and amino acid physiology. He has established himself as an expert in aquaculture nutrition, especially in the area of protein, amino acid nutrition, and aquafeed additive research, and has published more than 30 peer-reviewed papers on the subjects.

“Rendered animal products are the most undervalued feed ingredients in the Asian feed ingredient market,” said Li. He began his employment with NRA on January 2, 2009, followed by a week of visits to NRA member companies before reporting to NRA’s regional office in Hong Kong on January 13, 2009.

Cargill Plant Named Feed Mill of the Year

The Cargill Animal Nutrition plant in Martinsburg, PA, has been named 2008 Feed Mill of the Year by the American Feed Industry Association and Feedstuffs. The award recognizes overall excellence in feed manufacturing operations.

The Cargill plant is located in the heart of Pennsylvania’s dairy country and exclusively manufactures dairy feed.

The runner-up feed mill is Ridley, Inc.’s, plant in Beloit, KS, which is a large manufacturer of feed for show animals.

Change of Leadership at Sanimax

Martin Couture, chief operating officer, Sanimax, Montreal, QB, Canada, has been appointed president and chief executive officer (CEO) following the retirement of Michael Langenhorst in early December 2008.

“We wish Martin the best of luck in his new role as CEO and are certain that he will provide strong leadership to the enterprise in these challenging economic times,” said Andre Couture, chairman, Sanimax.

Since the merger of Sanimal, Anamax, based in Green Bay, WI, and Bi-pro Marketing, Ltd., in early 2005, Langenhorst has played a key role in the integration of the three organizations.

“Mike has contributed to the development of Sanimax and the entire industry and we sincerely thank him for the work he has accomplished and wish him much success in his retirement,” remarked Andre Couture.

Cattle Group Names Roberts to Lead

The National Cattlemen’s Beef Association (NCBA) has selected Forrest L. Roberts as its next chief executive officer. He began his new endeavor on January 20, 2009.

Roberts grew up on a family-owned, diversified livestock operation in Uvalde, TX. He worked side-by-side with his family when the operation expanded to include a retail meat market for beef and pork. Forrest earned a bachelor of science degree from Texas A&M University, and a master’s from the University of North Carolina.

Roberts has held several marketing and sales positions in two animal health companies. He began with Upjohn Animal Health in 1992, remaining with the company through two mergers. In 2004, he joined Elanco Animal Health where he most recently served as the marketing manager for Elanco’s beef business unit. Roberts has served in several volunteer positions at NCBA, including as a member of the group’s executive committee, board of directors, Allied Industry Council, Long-Range Planning Committee, and the National Cattlemen’s Foundation Board of Trustees.

Roberts was chosen from over 70 applicants to fill the position vacated by the resignation of Terry Stokes, who had been with NCBA since 1996.

Reno Rendering Recovers from Fire

Reno Rendering, a subsidiary of Sacramento Rendering Company, Sacramento, CA, is now fully operational after suffering a fire in June 2007 that destroyed about 90 percent of the transfer station that included processing equipment for restaurant grease. Processing tanks and company trucks did not suffer any damage, allowing the renderer to continue servicing customers in Reno and Northern Nevada while it rebuilt the facility.

Pilgrim’s Pride Names President and CEO

Don Jackson has been named president and chief executive officer (CEO) of Pilgrim’s Pride Corporation, subject to approval of the U.S. Bankruptcy Court for the Northern District of Texas. The company filed for Chapter 11 filing on December 1, 2008. Operations in Mexico and certain operations in the United States were not included in the bankruptcy filing and continue to operate as usual outside of the Chapter 11 process.

Jackson has been president of Foster Farms’ poultry division, based in Livingston, CA, since 2000. Prior to that, he served as executive vice president for foodservice of the former ConAgra Poultry Company in Duluth.
Trone Retires from Onken

In January, John Trone retired from Onken, Inc., after 19 years of service to the company and trailer manufacturer.

In June 1990, Trone came to work for Onken in sales with customer service as his top priority. When asked what he’ll miss most after retirement, he commented, “The relationships with the customers. There are a lot of great people in this industry.” Trone and his wife, Leslie, plan to travel the United States and make their part-time hobby of real estate in the Southwest more full-time.

David Hull succeeds Trone in the sales department at Onken.

Tyson Pledges Guilty in Worker Death Case and Searches for New CEO

Dick Bond, president and chief executive officer (CEO) of Tyson Foods, Inc., resigned from the company on January 5, 2009. Leland Tollett, former chairman and CEO of Tyson, agreed to return to his former positions at the company on an interim basis until a permanent successor has been chosen.

“After seven years of helping lead or leading the world’s largest meat company, I have decided it is in both my best interest personally and the best interest of the company for me to move on and pursue other interests,” Bond said. “I have a lot of both my time and personal finances invested in Tyson Foods, so I wish the company all the best for future success.”

Additionally, Donnie Smith, longtime Tyson executive, has been named senior group vice president of Poultry and Prepared Foods, and will have overall responsibility for those divisions of the company.

On January 6, 2009, Tyson Foods pleaded guilty in U.S. District Court in Arkansas and agreed to pay $500,000 in fines, the maximum criminal penalty, for willfully violating worker safety regulations that led to a worker’s death in its River Valley Animal Foods (RVAF) plant in Texarkana, AR. Per a plea agreement, Tyson Foods will also serve one year probation.

According to information filed along with the plea agreement, Tyson operated several RVAF plants that recycled poultry products into protein and fats for the animal food industry. As part of the rendering process in four of the plants, the company used high-pressure steam processors, or hydrolyzers, to convert the poultry feathers into feather meal.

Decomposition of biological material such as poultry feathers produces hydrogen sulfide gas, an acute-acting toxic substance. Employees at the Tyson facilities often were exposed to the toxic gas when working on or near the hydrolyzers, which required frequent adjustment and replacement.

As of October 2003, corporate safety and regional management were aware that hydrogen sulfide gas was present in the RVAF facilities and three of the four facilities with hydrolyzers had taken measures to protect employees from the toxic gas near the equipment. However, Tyson Foods did not take sufficient steps to implement controls or protective equipment to reduce exposure within prescribed limits or provide effective training to employees on hydrogen sulfide gas at the Texarkana facility despite an identical exposure resulting in hydrogen sulfide poisoning of an RVAF Texarkana employee in March 2002.

As a result, at approximately 1:00 a.m. on October 10, 2003, RVAF maintenance employee Jason Kelley was overcome with hydrogen sulfide gas while repairing a leak from a hydrolyzer and later died. Another employee and two emergency responders were hospitalized due to exposure during the rescue attempt. Two employees also were treated at the scene.

The Occupational Safety and Health Act (OSHA) requires that employers furnish places of employment free from recognized hazards that are likely to cause death or serious physical harm to employees. This includes taking steps to ensure that employee exposure to dangerous substances such as hydrogen sulfide gas remains within prescribed limits. Tyson Foods pleaded guilty to a “willful violation of an OSHA standard resulting in the death of an employee,” the most serious offense available.

Render Web Site Sports New Look, Features

Render’s Web site at www.rendermagazine.com is sporting a new look and some added features that will allow visitors easy access to current and past issues, the latest news, upcoming industry meetings, and provide employers a way to connect to job seekers.

A new feature of the redesigned site is a “careers” page where employers can announce current job openings in an effort to find the best possible candidate. The new site also includes the current issue of Render posted as a PDF on the home page, with previous issues posted under “past articles.” A frequently updated news page keeps the industry informed between issues, and a subscriptions page allows new readers to request Render and current readers to make address changes to their existing subscription.

Information about the rendering industry, such as a roster of industry suppliers featured in the current issue of Render and a directory of National Renderers Association members, is available on the Web site as is a schedule of upcoming meetings. Animal disposal issues receive attention on the new site, including recently published papers by the Council for Agricultural Science and Technology. Links to various industry associations is also available along with information on advertising in Render.

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Back cover
A word about manufacturing quality from a friend at Dupps

“The fabrication shop is where all the pieces come together for our cookers — equipment that is the heart and soul of the rendering plant. We make ASME code certified pressure vessels, and there are no short cuts.

“At Dupps, we have in-house inspection procedures that are above and beyond what the code requires. On every vessel, each weld is inspected three times: at the set-up, root pass and final pass. And each weld is initialed by the welder. Every step is tracked and kept on file.

“Quality is standard procedure, but we combine that with customer service. We know that downtime is extremely expensive for any customer. Recently, our department worked 24/7 to build a vessel, because that’s what the customer needed to get a system installed over a holiday weekend. We’ll do whatever it takes, that’s why we’re here.

“I’ve been here for 25 years, and that kind of service is how it’s always been.”

The Dupps family includes all the dedicated and hard working employees whose efforts, loyalty and pride have made our company the best in the business. Compare our level of knowledge, experience and service with any of our competitors. When you do, we’re sure you’ll agree that Dupps is your logical choice.

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