

June 2007

# Petfood Industry

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## Leaders of the organic pack

Brian Connolly and Shelley Gunton  
of Castor & Pollux Pet Works, p. 16

Top treat trends

Packaging sustainability

Recall update from China

Controlling ingredient interactions

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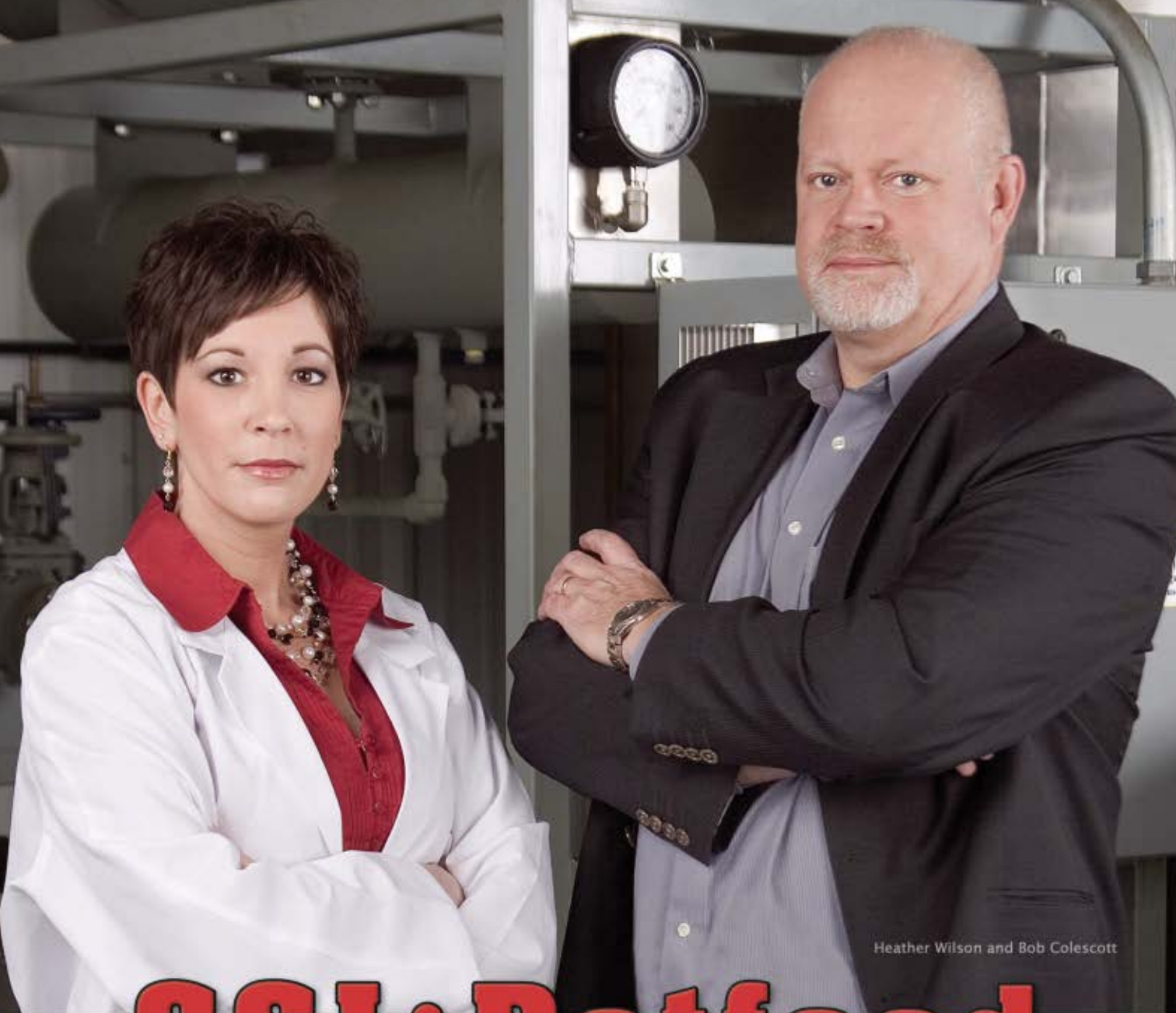
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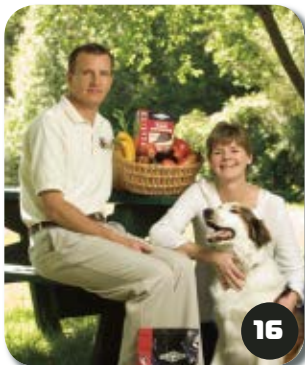
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**On the cover:** Brian Connolly, Pack Leader, and Shelley Gunton, Top Dog from Castor & Pollux Pet Works.

Photo by Andrea Johnson ([www.andreajohnsonphotography.com](http://www.andreajohnsonphotography.com)).

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# Recall crisis: what we've learned

**“T**he repercussions from this petfood contamination crisis will be seen for years to come,” said traceability expert Julie Lenzer Kirk. “No one is immune and we’re all in this together.” She was speaking at Petfood Forum on April 18, 2007, as part of a panel discussion on “Traceability: what do you do when something goes wrong?” Following are excerpts from that panel discussion.

## What pet owners are thinking

“Consumers are trying to figure out how they can control the situation,” observed Dr. Doug Powell, the scientific director of the International Food Safety Network. “In any risk situation, they ask: ‘What can I do?’ We hear pet owners saying that they’re going to try the BARF diet and petfoods that are more natural—because they believe it’s a way to control things. It’s not. Petfood safety starts at the farm.”

“I think what the last month has caused the American public to realize is that it is a global marketplace,” noted Matt Frederking, manager of regulatory compliance for Southern States Cooperative. “We now have to manage risk in a global economy.”

## QA systems

“The turmoil in the past several weeks comes down to knowing where you’re buying your ingredients,” said Frederking.

Powell concurred, saying, “What consumers see is the brand name. Your name’s on it, you sell an unsafe product, you’re liable. The lesson is know your suppliers—and this goes

**He thinks you need to have your people on the ground watching.**

— Tim Phillips



way beyond HACCP, checklists and so forth—that’s all paper.” He thinks you need to have your people on the ground watching to see that suppliers are doing what they say they are doing. “Producers know how to cheat, they don’t like paperwork and they know how to get around it,” said Powell. “You need to build trust with your suppliers.”

Regarding safety manuals and documents, observed Frederking, “Anybody can make paper look as good as they want paper to look. It gets back to the human practices within your facilities.” He said, “As you do an evaluation of your system, that’s where you ought to put your focus—what are my employees doing? That’s where you actually have control of the QA system.”

Ladd Hardy, senior VP marketing at Nutro Products, noted that, “Since it is impossible to test for every possible contaminant, we do feeding trials on every batch of dry petfood we make. That batch is held until it passes the feeding trial.” Due to the recalls, Nutro is starting the same procedure for its wet petfoods.

“Companies are about making money and when there’s an outbreak, everybody pays attention to their QA experts,” noted Powell. “But in the absence of an outbreak, maybe they don’t

pay enough attention. The challenge is getting people to take this stuff seriously in the absence of an outbreak.”

## What to do when it happens

“You need to be able to tell the story of what you do and further, you need to back it up,” said Powell. You need clear and consistent communication. You need to be open and transparent about your methodologies and about what you are doing. You need to demonstrate that you understand what’s happening. “People will vote with their pocket books if you act in a trustworthy way,” noted Powell.

“It’s all going to change,” said Hardy. “We felt that we had adequate safety measures in place and that we had adequate checks on everything, but as it turns out we didn’t.” Nutro will make its new quality assurance program public very soon. “We’ve got to,” he said. “It just breaks your heart to see products with your name on them taking this kind of a beating. Whatever we have to do at whatever level of cost and diligence, we have to do it.” ●

*Dr. Phillips is the editor of Petfood Industry magazine. He can be reached at Tel: +1.815.734.5644, tphillips@wattnet.net.*



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# Industry News

## Developments in melamine contamination

China launched a food and drug safety crackdown following an announcement that authorities had detained managers from two companies linked to contaminated ingredients used in petfood products. The detained managers worked for Xuzhou Anying Biologic Technology Development Co. Ltd. and Binzhou Futian Biology Technology Co. Ltd., both listed as having exported melamine-spiked rice protein and wheat gluten to the US. (For more information, see the article on p. 28.)

The FDA sent food inspectors to China to investigate the companies that made the melamine-tainted ingredients. “We visited the two facilities, but there’s essentially nothing to be found in that they are currently closed down, not operating,” Walter Batts, deputy director of the FDA’s Office of International Programs said. The FDA has stated that those Chinese companies mislabeled the melamine-tainted ingredients shipped to the United States. Those ingredients—labeled as wheat gluten and rice protein—were really wheat flour.



“When our forensic chemistry center specifically looked into that ... we were able to measure the starch level of this product and determine that it wasn’t in fact wheat gluten, but wheat flour,” said Dr. David Acheson, the FDA’s new assistant commissioner for food protection. He added: “I can tell you that some of our testing has indicated that some of the melamine-positive material labeled as rice protein concentrate was not rice

protein concentrate. It was indeed the ground wheat flour with melamine ... so certainly some of the rice protein concentrate that we tested was mislabeled.”

The FDA said the mislabeled melamine-tainted rice protein entered the US in August of 2006; the mislabeled wheat gluten first came into the country in November 2006.

“Those are the only two companies that we are aware of that sold this contaminated protein concentrate,” said the FDA’s Dr. Stephen Sundlof, director of the Center for Veterinary Medicine.

In other recall related news:

- ▶ Scientists at the University of Guelph discovered a chemical process that could explain how pets were sickened by tainted petfood. They found that melamine and cyanuric acid, a metabolic by-product of melamine, react with one another to form crystals that may block kidney function. Tests at the university’s laboratory identified these crystal-like substances in the kidneys and urine of affected animals.
- ▶ In the US Congress, Senator Richard Durbin and Representative Rosa DeLauro introduced legislation that would enhance the nation’s ability to protect the food supply. The Senate approved the legislation May 2, by a vote of 94 to 0, as a Durbin amendment to a broad bill regarding the FDA. The amendment would require the FDA to set processing and ingredient standards for petfood, strengthen labeling requirements, establish an early warning system for contaminated products, improve communication with the public and veterinarians during recalls and take other steps to help prevent deaths and illnesses.
- ▶ All vegetable protein products imported from China must now be tested for melamine, cyanuric acid or other melamine-derived compounds



**Senator Richard Durbin speaks to a group of pet owners in Chicago, Illinois, USA. The dog pictured here ate contaminated petfood, became ill, but survived.**

prior to entry into the United States. FDA officials will be visiting manufacturers in the US that use protein concentrates in human, pet or animal foods and testing products for melamine and melamine-related compounds. It will also sample some of the finished products.

- ▶ Royal Canin USA announced the voluntary nationwide recall of eight Sensible Choice dry dog food products and seven Kasco dry dog and cat food products. This announcement was based on the company’s identification of a melamine derivative from tainted Chinese rice protein concentrate provided by Cereal Byproducts.
- ▶ A Michigan State University (MSU) professor is conducting a survey to better estimate how many pets have died after eating tainted food and to determine what, specifically, killed them. Wilson Rumbelha, professor of veterinary clinical toxicology of MSU’s veterinary school, will present his findings in October in Reno, Nevada, USA, at a convention of the American Association of Veterinary Laboratory Diagnosticians. The group is funding the survey.
- ▶ Integrated Management Information Inc. ([www.petsupplyverified.com](http://www.petsupplyverified.com)) has announced the launch of Pet Sup-

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ply Verified, a "comprehensive new petfood verification system designed to build consumer confidence in pet-food products."

- ▶ Chenango Valley Pet Foods voluntarily recalled dry petfoods manufactured with a certain shipment of rice protein concentrate. The petfoods were sold to customers in Wisconsin, Massachusetts and Pennsylvania, who in turn sold the products to their customers through catalog mail orders or retail outlets. Dry petfoods involved in the recall included Doctors Foster & Smith cat and dog foods.
- ▶ Diamond Pet Foods withdrew a limited number of canned products manufactured by American Nutrition due to inclusion of an affected rice protein concentrate.
- ▶ Menu Foods extended its recall due to possible cross-contamination with other products and pulled Schnucks canned cat and dog food because it may contain trace amounts of melamine in the wheat gluten. The expansion included cuts and gravy petfood, as well as other products that were not made with the contaminated wheat gluten supplied by ChemNutra Inc., but were manufactured during the period the chemical-laced gluten was used.

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### Mars Inc. buys Nutro



Mars Inc. has announced the signing of a definitive agreement to acquire the global petfood operations of Nutro Products Inc. Closing of the purchase of Nutro is subject to normal regulatory approvals, which are expected to be completed within a few months. Terms of the deal were not disclosed.

Nutro will reportedly operate as a stand-alone organization within the Mars family of companies and will maintain its commitment to the pet specialty channel. Nutro president and CEO David Kravis, together with the current management team, will continue to operate the business from its headquarters in City of Industry, California, USA.

## ChemNutra calls for ingredient summit

ChemNutra has called for a national summit of petfood ingredients importers, analysis laboratories and manufacturers to begin drafting import standards and specifications for petfood ingredients, not only those from China, but also those from around the world. ChemNutra has volunteered to serve as the coordinator of a one-day conference tentatively scheduled for July 14, 2007, in Las Vegas, Nevada, USA.

"I am hopeful that those who import and use imported petfood ingredients will set aside any competitive differences we may have to unite for what I know is a common purpose—the safety of pets. We also invite the participation of experts in product safety and analysis," said Steve Miller, chief executive officer of ChemNutra.

Miller added, "We are not trying to in any way supersede or interfere with the government agencies who will also, we're sure, be establishing new protocols. Rather, we seek to move for self-improvement at the quickest possible pace, even while new rules or legislation are being considered."

He said, "The sole purpose of this high level meeting will be to (a) establish a process for collectively drafting new testing and importing standards for petfoods and (b) discern the industry's

interest in establishing a new trade association with a single mission: to ensure the safety of petfood ingredients and petfood." For further information, contact Steve Stern at [steve@sdsternpr.com](mailto:steve@sdsternpr.com) or visit <http://www.chemnutra.com> to register.

## Dibevo and Zoomark are top European shows

Dibevo in the Netherlands and Zoomark in Bologna are the two international trade shows that *PETglobal* readers have expressed a preference for visiting this year, according to a recent survey. Of those taking part in the survey, 39% indicated their intention of visiting Dibevo in Gorinchem, while 32% favored Zoomark International in Bologna. These were followed by Expozoo in Paris, which took place in March. DeZooFa in Wiesbaden and Glee Petindex in Birmingham came in further down on the list.

## Penford Food launches chews and treats line

Penford Food Ingredients, a division of Penford Corp., announced that it has entered the growing market for companion pet chews and treats. Recognizing opportunities to connect product development, food science, product safety and efficacy, Penford created a platform that can deliver a variety of

proprietary formulations, applications and services to the pet industry. Penford has developed a range of extruded and injection molded treats and chews for pets that are based on new carbohydrate technology. According to the company, these products are designed to address consumer demands for safer and more functional products that enhance health and quality of life for companion pets.



## AFB International signs joint venture agreement

AFB International Inc. recently announced that it has signed a joint venture agreement with Inghams Enterprises, Australia. The terms of the transaction were not released. Under the agreement, Inghams will manufacture and market AFB's BioFlavor and Optimizor brands of palatants for dog and cat food. Inghams will operate two manufacturing facilities in Australia. The plants in Brisbane and Melbourne will produce flavors that have been developed by AFB to meet the palatant needs of the Australian, New Zealand and Asian markets. The joint venture will trade as AFB International Pty Ltd. ●

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# New on the Shelves

Editor's note: Submissions and feedback are welcome. Contact Jenny Kvamme, Tel: +1.815.734.5637, Fax: +1.815.734.5649, Email: jkvamme@wattnet.net.



## Edible mushrooms for dogs

Muttrrooms, a blend of five certified organic mushroom species baked into a treat, are now available. This dog treat containing mushroom mycelia is designed to support a dog's health and immune system, promoting mobility and healthier joints, according to the company. [www.muttrrooms.com](http://www.muttrrooms.com)

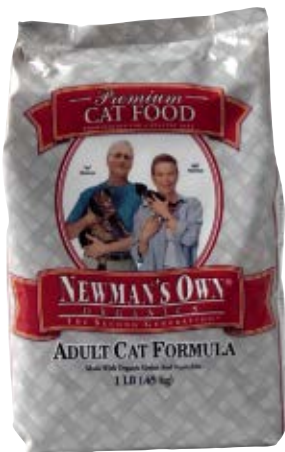
## Three Dog Bakery introduces new products

Several new products have recently been introduced by Three Dog Bakery. These include Spearmint Bagels; Itty Bitty Bones; Entree for Dogs; and a reformulated "all-natural" dry kibble dog food. Three Dog Bakery's packaging and graphics have also been completely redesigned. [www.threedog.com](http://www.threedog.com)



## Advanced Formula line from Newman's Own

Newman's Own Organics' new Advanced Formula line provides high protein levels to optimize health and vitality, according to the company. The new dry food comes in an Advanced Dog Chicken & Rice Formula for both puppies and seniors and an Adult Chicken & Rice Formula for active adult dogs. The Advanced Cat Chicken & Rice Formula for kittens and seniors and Adult Cat Chicken & Rice Formula are available in four flavors. [www.newmansown.com](http://www.newmansown.com)



## HipFlex Soft Chewable for active and aging dogs

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# Leaders of *Organic*

The founders of Castor & Pollux have a thriving business—thanks to their dog Joey

BY TIM PHILLIPS, DVM

In 1985, Shelley Gunton and her husband Brian Connolly were transferred to Hong Kong by the Royal Bank of Canada. Due to fear of rabies, Hong Kong authorities required that Joey, the couple's much-loved Labrador mix, be held in

quarantine for six months.

In quarantine, Joey did not do well on the standard Hong Kong pet diet of table scraps and ground horsemeat. "You could really see a deterioration in his skin and coat, which is when we started our hunt for better petfood," says Gunton.

## Business basics

**Corporate headquarters:** Clackamas, Oregon, USA

**Annual sales:** Castor & Pollux is a private company that does not disclose sales for competitive reasons. The company doubled sales in 2006 and expects to do so again in 2007. In 2005, *Fortune Small Business* magazine estimated C&P's sales to be US\$5 million.

**Brands:** Petfood brands are Organix (certified organic product) and Natural Ultramix (six meat proteins with real fruits and vegetables inside). There are multiple other brands of treats and supplies under the Castor & Pollux umbrella brand. In 2004, C&P entered into an

agreement with Discovery Channel's Animal Planet to create dog and cat chews and treats, totaling 35 products, under the Animal Planet brand.

**Officers:** Brian Connolly, president, and Shelley Gunton, vice president.

**Distribution:** C&P products are distributed throughout the US in natural and gourmet food retailers, specialty pet stores and Petco. Animal Planet is sold at Target, Rite Aid, Petco, WinCo Foods, Lewis Drugs and other grocers/supermarkets.

**Exports:** Canada, Japan, New Zealand, Hong Kong, Taiwan, South Korea and Thailand.

**Website:** [www.castorpolluxpet.com](http://www.castorpolluxpet.com)

**You could really see a deterioration in his skin and coat.**

The couple could not find anything in Hong Kong that was as good as Joey's customary diet, Iams dog food. So they began ordering crates of Iams from a distributor in Singapore—much of which they resold to the other expatriate pet owners they met in quarantine. They ultimately persuaded the Iams senior VP for in-



# the pack

ternational sales to give them a distributorship in 1988.

In 1993 Shelley and Brian returned to North America and took over an Iams distributorship in Portland. But when Iams was sold to Procter & Gamble in 2000, they decided it was time to follow their ultimate dream, that of creating their own brand.

## The concept

After a year of work on product development, packaging, design and strategy, Castor & Pollux Pet Works (C&P) launched with 150 products at the Natural Products Expo in Anaheim, California, USA. Under a noncompete agreement with Iams, petfood was not part of the introduction but followed two years later with Organix and Natural Ultramix.

The concept? Create a brand pet owners could trust from petfood to shampoos, collars and leashes. For retailers, provide a one-stop shop for the premium, natural and organic categories—complete with fixtures.

Originally envisioned as a pet aisle solution for natural and gourmet grocery stores, C&P soon evolved into a pet specialty brand with the launch of Organix, among the first petfood and treats lines to be certified organic and adhere to the USDA's National Organic Program's labeling regulations.

C&P is now a multimillion dollar company with 150 products, including petfoods, supplements, treats, chews, toys, accessories and cleaning products.

## Contamination: let's do the right thing

The seemingly endless petfood contamination crisis goes on. And no one is immune. On April 18, 2007 Brian Connolly was part of a panel at Petfood Forum 2007, when he said, "Let's set up an industry-wide crisis fund to help the pets and people affected by contaminated petfoods." At the time he had no reason to suspect that any of Castor & Pollux's products would ever be affected by the contamination crisis, but on May 2, C&P implemented a voluntary recall of four Natural Ultramix Canned Feline Formulas, due to possible cross-contamination with another company's product that contained affected wheat gluten and was produced on the same Menu Foods manufacturing line. Even though their products are not formulated with wheat gluten, C&P implemented the voluntary recall as a precaution. Test results have since shown the products to be free from

contamination.

Connolly believes that a crisis fund is best done as an industry and not as individual companies. "The recall has touched all North American customers in one way or another," he says, "and an industry fund to help out immediately with treatments costs, wellness check-ups and medication is a way for us to give back and restore some confidence." He believes that our industry is made up of caring, dedicated professionals and a crisis fund is entirely in keeping with what we believe is doing the right thing

Connolly has spoken to a lawyer who specializes in charitable trusts and 501c3, and he believes there is a way to structure a fund that is separate from the Pet Food Institute (USA), but funded on a voluntary basis by its membership. "Like anything," he says, "where there is a will, there is a way."

## Organix research

Development of the Organix products required extensive research into formulations utilizing available certified organic ingredients and the rigorous requirements of the USDA's National Organic Program. Debuting in March, 2003, Organix was the first petfood to be made with certified organic, free-range chicken as the number

**In June 2003, Castor & Pollux introduced the first-ever 70% organic petfood, Organix, which quickly accounted for 50% of the company's sales.**



one ingredient in both dog and cat formulas. From seven SKU's in 2003 to the 28 now available, the Organix line continues to expand .

### Natural Ultramix

Realizing that not all consumers are ready to commit to an organic lifestyle,

C&P introduced Natural Ultramix in early 2004. Natural Ultramix dry food was the first to contain dried raw fruit and vegetable pieces, including carrots, bananas, papayas, apples and blueberries blended with the kibble.

Petco, recognizing the surge in natural and organic product interest,

## Ultimately quality ingredients and quality products talk the loudest.

introduced Natural Ultramix in all 850 stores at once, bypassing the traditional slower roll-out approach.

### The loudest talk

Asked about his most difficult challenges, Connolly notes that, "As a small company in a large industry, there is always another competitor that has more resources to offer retail customers, to spend on advertising, to have more sales reps or to have a bigger trade show booth. We counter these factors by putting our money into what goes in the Organix and Natural Ultramix products. We think ultimately quality ingredients and quality products talk the loudest."



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# Top treat trends

## Highlights from Petfood Focus on Treats: the market is booming globally

BY JENNY KVAMME, DVM

**H**ot keeps getting hotter. With the global treat market worth an estimated US\$4 billion, *Petfood Industry* chose treats as the subject of its most recent Petfood Focus event, held April 18-19, 2007, following Petfood Forum 2007 in Chicago, Illinois, USA. Over 275 attendees were present. Three of the topics from this event are summarized here.

### Treat market overview

Bruce McKay, a petfood industry consultant, presented an overview of global treat trends using data from Euromonitor International. On a volume basis, the petfood market has averaged modest growth of 2.5% annually over the past five years, while the treat segment has shown slightly higher growth.

He noted that two areas of the world dominate: North America represents 52% of the global treat market, while Western Europe accounts for 30%. In value terms, all major regions of the world are showing solid growth, particularly Eastern Europe and Latin America.

McKay stated that as you look at global opportunity you need to look at the market differently. He believes there should not be a one-size-fits-all strategy for this marketplace and that there are very different opportunities regionally.

"I think there are new volume opportunities in some of the emerging markets

of Latin America, Asia and Eastern Europe in particular. I think that they will exist for some time to come," stated McKay.

Germany, England and Japan have all had a lead on North America in terms of sophistication of the packaging and of some of the products, according to Mc-

Kay. The consumer is showing a strong willingness to pay. McKay thinks this is something American companies should consider. "I think they can increase the sophistication of their products, increase the price points and capture a lot more value," he said.

McKay took a six-year look at the treat business, and he found that the dominating markets of North America and Japan were showing the best growth (see Figure 1). He also found that treats range in price from US\$1.00/lb. to US\$30/lb. "The truth is that some consumers are buying those products at US\$30/lb. This is a very exciting opportunity. And it's only going to get more dramatic as functional ingredients are promoted more aggressively. The beauty of treats is that you should have a singular focus in the functional benefit, so there's an opportunity to have a much more complete line and to capture this idea of added value," said McKay.

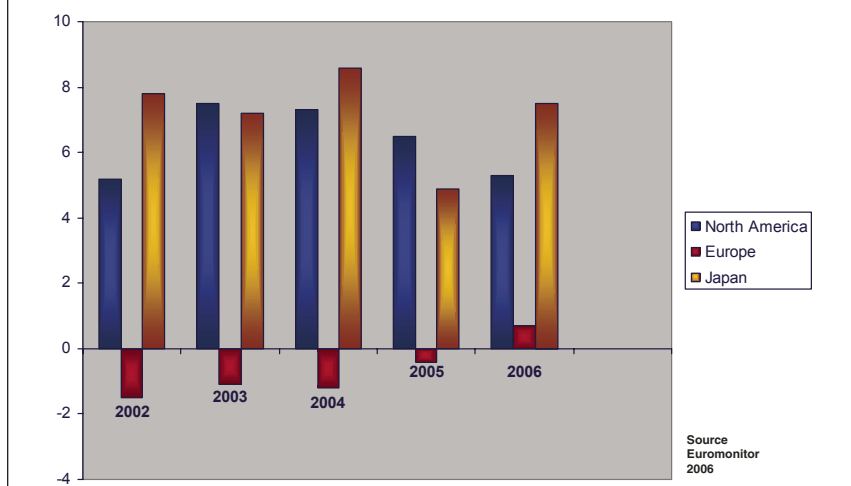
Next, McKay compared the human market to the pet treats market. "The important thing here is the consumer has to understand the function of the product for themselves before they would contemplate giving it to their pets. As you evaluate your opportunities, make sure you've looked at it from both sides with a human mind-set before jumping into the pet side of things. We can't get too far ahead of ourselves," he said.

McKay demonstrated that two-thirds

### The experts' key points

- ▶ Consumers are showing a strong willingness to pay for sophisticated packaging and products.
- ▶ Marketers need to help consumers understand the function of a treat before they will consider giving it to their pets.
- ▶ For a veterinarian, the ideal treat would come in various sizes, have proven digestibility, very little risk for obstruction, no risk of toxicity and offer a new taste/smell every day.
- ▶ Treats could serve as an oral delivery system for medications, vaccines, vitamins, etc.
- ▶ The interest in functional foods is likely to drive dental treat growth.
- ▶ Chemical strategies in dental treats include antimicrobials and calcium chelators to inhibit calculus formulation.

## Annual growth rate of treat segment



of people answering a survey weren't quite sure what particular functional products did. There was uncertainty about probiotics, glucosamine and omega-3s. "If a consumer sees four or five different messages on a petfood package, frankly they get confused. At times we do ourselves a disservice trying to give away too much, or assuming the consumer understands more than we think they do. There is an opportunity to get more of a singular focus on treats. This will capture more of the value that I think is out there," said McKay.

### Functional ingredients

Dr. Robert Taylor, chief of staff for Alameda East Animal Hospital and one of the stars of Discovery Channel's *E-Vets Interns* TV show, gave his veterinary perspective on how functional ingredients in treats could be best used for companion animal health. He began by emphasizing that his over-riding principle is to be overly cautious about the types of treats he recommends because, ultimately, the veterinarian bears the burden of responsibility for everything he/she recommends.

From there, Taylor went on to describe his "ideal treat." He said that he would like to have numerous sizes of a particular product available, because dogs come in variations from two pounds to 250 pounds. Secondly, he requested proven digestibility. "We are

seeing great strides in digestibility studies. I commend you [the industry] for doing that. But, as it stands now, many of the treats out there now possess or pose some risk, so we have more work to do in furthering those digestibility studies," Taylor said. His ideal treat would have very little risk for obstruction, and obviously no risk of toxicity/poisoning.

He noted that veterinarians in general have major issues with pilling animals (administering oral medications). He often sees very poor compliance on the part of the owner to give a particular product. Thus, he requested a better solution for an oral drug delivery system, whether it's a supplement or a medicated edible chew product. In an ideal situation, he would like to see an oral delivery form for a variety of different things. Medications, vaccines, vitamins, probiotics, etc., would really make his job much easier and would really benefit animals worldwide, according to Taylor.

One of the things that intrigued Taylor about the petfood industry is that manufacturers can change the taste and the smell of various products. He said it would be very useful to have a functional product with a new taste/smell profile for every day (up to 30 days of treatment), so the animal wouldn't tire of the flavor.

So, what does the future hold? As Taylor sees it, edible vaccines could be used to eradicate animal diseases around

**Figure 1. The annual growth rate of the treat segment in North America, Europe and Japan from 2002-2006 shows that Japan has a strong treat market, while Europe is slowly stabilizing and North America is doing well, but not experiencing explosive growth. Source: Euromonitor, 2006.**

the world. Another trend that he has found very intriguing is the emergence of obesity in our animals. He thinks the petfood industry could utilize some of the information that is currently developing with new novel nutritional treats/products involving enzymes, probiotics and some form of oil product, like palm oil, in an effort to create early satiety.

### Treats for dental health

Dr. Jennifer Larsen, consultant for Davis Veterinary Medical Consulting PC and assistant clinical professor at the University of California at Davis, shared her perspective on dental treats. She told the audience that a survey of veterinary practitioners from 52 private clinics found that dental disease was the most commonly reported disorder in that population. Of over 31,000 dogs in that population, over 20% of dogs of all ages had calculus and 20% gingivitis. Of 15,000 cats of all ages, 24% had calculus while 13% had gingivitis.

According to Larsen, using foods that are formulated for dental disease as treats in small amounts in addition to the animal's regular diet is commonly seen in practice. The interest in functional foods is likely to drive dental treat growth, according to Larsen.

Larsen said there are two different strategies used in dental foods and treat products, mechanical and chemical. The mechanical effects are scrubbing and structural. The size and shape of the kibble or the treat influences chewing time, which in turn influences tooth contact time and gingival stimulation. Another aspect of the mechanical strategy is the abrasive effect.

On the chemical side, there are a couple different ways to deal with dental disease. Some chemicals are aimed at the bacterial population (antimicrobials) and are designed to inhibit calcu-

lus formulation. Some of the common antimicrobials in both foods and treats include enzymes. Enzymes include lactoperoxidases and such things naturally occurring in saliva, and they have been added in even higher amounts in treats and some foods. Chlorhexidine is an antiseptic that is incorporated in some

treats and added to some rawhide type dental treats.

Zinc salts are also showing some promise in this area, according to Larsen. Currently, they are used mainly in toothpastes and gel products that are applied to the tooth surface. They have antimicrobial affects and some inhibitory



**Dental care is an important area of the expanding treat market.**

affects on calculus formation as well.

Another newer antimicrobial strategy is the use of grape and green tea polyphenols. They have been used mainly in the food area, and Larsen has not seen them incorporated into treat products yet. She believes that this is an area that will become more common.

Calcium chelators are another chemical means of inhibiting calculus formation. They work via taking away the calcium present in saliva and binding it up so it's not available to mineralize into a calculus on the teeth. Chemical chelators include sodium tripolyphosphate and sodium hexametaphosphate (HMP). They have been proven to be a pretty effective means of dental disease prevention, noted Larsen, especially when used as a coating on kibble. They have not been shown to be effective when combined into the kibble itself, however.

Larsen stressed that it's important to prove efficacy when you have a functional product such as a dental treat. Not only to meet regulatory approval, but because a lot of recommendations will be coming from the professional (veterinary) sector. Veterinarians want to see proof of efficacy because their reputation depends on that. The consumer is also becoming more discerning as far as demanding proof of efficacy.

"There's an expanding market for dental treats, I think, that's really exciting, there's a lot of opportunity for growth and some really great innovative products. I really encourage you to establish efficacy with your clinical trials and apply for Veterinary Oral Health Council approval," she concluded. ●

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# Packaging sustainability

## Minimize the natural resources, energy and disposal effects of packaging

BY PAUL KEARNS

**A** new term has likely emerged in your lexicon over the last couple of years: sustainability. Is it the latest buzzword? Is it more than a fad?

The root word, sustain, means “to keep up or keep going, as an action or process: to sustain a conversation.” So sustainability is an action or process that is ongoing. A sustainable process is one that can keep itself going.

Now think of it in terms of a planet. The population in the US exceeded 300 million this year. In the next generation, the world’s population is expected to exceed 8 billion. How is the planet to keep itself going with continually greater demands on its resources?

### More than recyclable and renewable

From a broader perspective, sustainability refers to providing for the needs of the current generation without compromising the ability of future generations to provide for their needs. Simply,

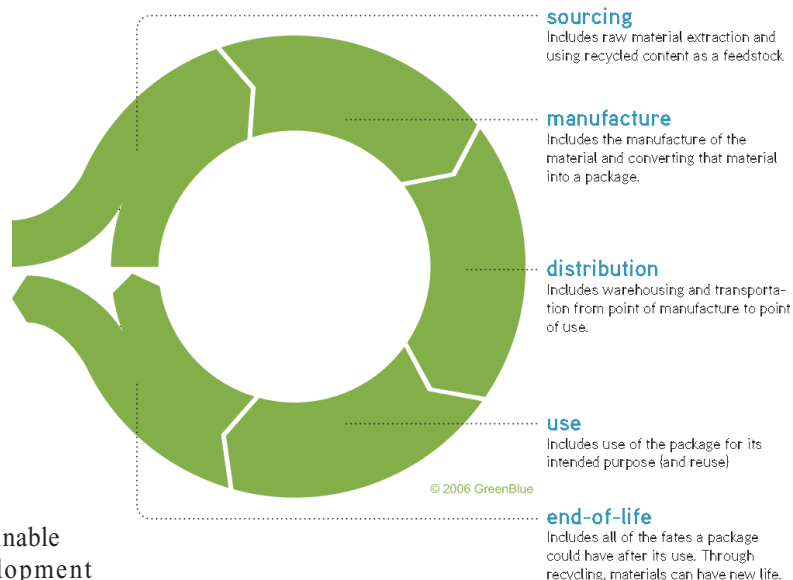
sustainable development minimizes the use of nonrenewable materials and energy in satisfying today’s needs.

Sustainability is more than a recyclable package. Sustainability is more than renewable materials. Once you stop to think about the concept, minimizing energy usage, water usage, waste and pollution can apply to everything you do. It will touch everything in your life, both professionally and personally.

So, you’re really interested in sustainable packaging. What is it? Who’s got it?

### Absolutes or continuum?

Fitting packaging into the definition above, sustainable packaging is developed by minimizing the natural resources, energy and disposal effects of packaging. Are there sustainable packages? It depends on whether you consider the definition in terms of absolutes or a continuum.



**Figure 1. Sustainable packaging is about more than just recyclable or renewable materials; it’s a closed loop starting with sourcing and environmentally minded design and continuing through distribution and waste management. Copyright 2006 GreenBlue.**

Think of the journey as an aspiration to create packaging whose lifecycle is a closed loop, cyclical in nature. Waste throughout the process is minimized. Materials are reused to make new packaging. The amount of greenhouse gases (GHG) and CO<sub>2</sub> emitted to the atmosphere and waste in the landfill is reduced.

The Sustainable Packaging Coalition (SPC) has created an eight-point definition that describes the absolutes of sustainable packaging (see “8 sustainability criteria” on p. 24). Practically, packaging professionals must

realize these virtues of sustainability represent a continuum on which to judge current packaging systems and base future design criteria.

Are there examples of sustainable packages in the marketplace today? Certainly, there are many, if you accept sustainable packaging as an aspiration-

al goal and not an absolute one. Packages such as glass bottles and aluminum cans have been collected and reused or recycled for decades. Flexible packaging offers source reduction options that minimize package weight. Corrugated packaging provides a highly sought after waste stream for recyclers.

## Four suggestions

When asked how petfood packaging in all its shapes and sizes can be more sustainable, I offer these suggestions:

**1. Minimize the use of excess packaging.** Using as little material as possible is the single biggest contributor to GHG reduction. Not only does it take less material and energy to make the package, but it also takes less energy to transport it. Don't overlook the opportunities to reduce secondary packaging.

**2. Maximize the use of renew-**

## 8 sustainability criteria

According to the Sustainable Packaging Coalition (SPC), sustainable packaging:

- 1.** Is beneficial, safe and healthy for individuals and communities throughout its lifecycle;
- 2.** Meets market criteria for performance and cost;
- 3.** Is sourced, manufactured, transported and recycled using renewable energy;
- 4.** Maximizes the use of renewable or recycled source materials;
- 5.** Is manufactured using clean production technologies and best practices;
- 6.** Is made from materials healthy in all probable end-of-life scenarios;
- 7.** Is physically designed to optimize materials and energy;
- 8.** Is effectively recovered and utilized in biological and/or industrial cradle-to-cradle cycles.

SPC is an industry working group and a project of GreenBlue, a not-for-profit organization. Its members follow cradle-to-cradle principles (designing with the environment in mind, considering all phases of the product lifecycle) and are dedicated to transforming packaging into a system that encourages economic prosperity and a sustainable flow of materials. For more information, visit [www.sustainablepackaging.org](http://www.sustainablepackaging.org).

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**able/recycled materials.** This extends the earth's ability to support an ever-growing human population. Many bio-based materials also provide substantial ecological benefits during their growing cycle. Using recycled materials provides an opportunity to recover valuable raw materials, thereby providing an opportunity to create economic value by eliminating the basic extraction and processing steps.

**3. Design for recyclability or compostability.** This helps reduce the ever-growing problem of human waste. Nobody wants a landfill in their backyard. As packaging is one of the largest contributors to municipal solid waste, it is incumbent on the packaging industry to develop solutions.

**4. Use materials that are safe in all end-of-life scenarios.** Promote the safe incineration, landfill, recycling or composting of packaging waste. Packaging that can be safely harnessed by any method will be much easier to integrate into any waste management stream.

### Recycling flexible packaging

Today, it is important to keep in mind that, when compared to alternatives, flexible packaging options offer petfood manufacturers a more sustainable system than any other. The packages are very lightweight, many are made principally from renewable materials, they are efficient to transport, and they perform their intended function reasonably well.

However, flexible packaging is often criticized because it is difficult to recycle. Well, don't despair. Today's recycling system is highly focused on only a few materials: corrugated paperboard, office paper, newsprint, aluminum, steel, polyethylene terephthalate and, in some cases, polyethylene.

Most materials collected in municipal recycling schemes do not actually get recycled because there is no market for the recycled material. In light of these limitations, one can argue that focusing on developing a petfood package that is recyclable will have very little value if it is not actually recycled.

Organizations like the Flexible Packaging Association and SPC are working to address the issues that limit the recycling of petfood packaging materials. By focusing on the needs of the recycler and pooling the efforts of the entire packaging supply chain, these issues can be solved. ●

*Paul Kearns is director of sales & technology for Exopack LLC, a member of the Flexible Packaging Association and Sustainable Packaging Coalition. Contact him at Tel: +1.864.596.7166, paul.kearns@exopack.com, www.exopack.com.*



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So far, there has been no evidence of melamine contamination of the Chinese petfood supply chain.



# Recall update: the scene from China

## With the US FDA, China works to address ingredient contamination

BY RACHEL LIU AND WANG FANGQING

In early May the Chinese government arrested two people involved in the melamine and cyanuric acid contamination of petfood ingredients exported to the US and stepped up enforcement activities. In addition, the Chinese government worked with experts from the US Food and Drug Administration (FDA) to help resolve the problem.

China's government authorities detained the managers of Xuzhou Anying Biologic Technology Development Co. Ltd. and Binzhou Futian Biology Technology Co. Ltd. Both exporters, these companies were identified by US and Chinese authorities as the culprits behind the contamination.

"The two companies involved in the contaminated petfood event have been closed," announced the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ), China's equivalent of the FDA, on May 14.

However, AQSIQ has not yet made

public the identities of the managers involved, the charges they are facing or any details of the investigation. A paper trail linked the two companies to exports of the contaminated ingredients to the US in late summer and fall of 2006.

The ingredients, originally identified as wheat gluten and rice protein, both turned out to be wheat flour laced with melamine, regulators said. According to AQSIQ, the products were mislabeled to avoid export inspection.

**China will update its food safety laws to bring them closer in line with international standards.**

### Cheating consumers to reduce costs

Food safety problems are a serious issue in China. In 2004, for example, dozens of babies died and hundreds became ill after being fed a baby formula with no nutritional value.

"In China, it is known that producers sometimes cheat consumers in order to reduce costs," said Sun Shuxia, the director of the China Health Care Association.

According to some reports, melamine has been in widespread use in China to artificially inflate protein readings in animal feed. Normally, melamine is used in the production of products like cookware, glues, resins and fertilizers.

"The melamine in dishware on the market is totally safe," said Hu Xiaosong, a professor at China Agricultural University. "However, melamine is a chemical material and is not on the list of legal food additives here."

In early May Chinese regulators

launched a nationwide inspection of wheat gluten producers in the country. By May 8 AQSIQ reported that investigators collected 399 samples from 173 export enterprises around the country, including the provinces of Beijing, Tianjin, Jilin, Shandong, Hebei, Zhejiang, Jiangsu, Henan, Hubei, Fujian and Ningxi. In addition, inspectors sampled 57 batches of plant protein, including corn, wheat and rice protein. “The inspection and quarantine agencies have not found any products with melamine contamination,” AQSIQ announced.

Authorities have also expanded the investigation to include spot checks of human food, including milk powder, liquid milk, noodles, sausages, bread and other products, and found no evidence of melamine, the agency reported.

In addition, Shanghai city food and drug authorities said on May 10 that the city had established a new testing system for food safety. “The system can tell the safety of most food products within 30 minutes,” said Li Jie, deputy director of the Shanghai Food and Drug Supervision Institute, according to the state-owned Xinhua newswire.

### No contamination in Chinese chain

So far, there has been no evidence of melamine contamination of the Chinese petfood supply chain. “I have not heard of the use of melamine as a petfood additive here,” said Guo Weizhong, dean of the Shanghai Shenpu Pet Hospital. “And there have been no recent cases related to melamine contamination in our hospital.” Shenpu, established in 1993, is the city’s largest pet hospital.

Guo said his hospital has seen cases of petfood poisoning in the past. However, it is difficult to determine the exact cause of death, he said, because the hospital does not do postmortems on animals.

As a precaution, local petfood distributors have taken steps to ensure the safety of their products. Nestlé Group, which sells its Nestlé Purina PetCare products in China, goes beyond the local safety requirements, said Sim Joohua, head of Nestlé Purina PetCare

## In early May, Chinese regulators launched a nationwide inspection of wheat gluten producers in the country.

for the Greater China Region.

“In addition to the China standards, we follow our own internal, extremely stringent standards to ensure petfood safety,” he said. “And we have never procured ingredients from the suppliers incriminated in the melamine case.” Nestlé manufactures its petfood in a new factory in Tianjin and also imports some petfood into China from a factory in Australia, according to Sim.

### Updating food safety laws

China will soon update its food safety laws to bring them closer in line with international standards.

“In China, food regulations and standards have been developed in an ad hoc way without the benefit of a basic food law,” said Joanna Brent, team leader for World Health Organization in China. “The institutional arrangements around food safety have made coordination among nine responsible government authorities problematic—another eight agencies have secondary food safety roles. Coordination and communication between these authorities needs to be improved, or a single agency nominated to be responsible for all food safety matters.”

According to Brent, an estimated 300 million people are affected by foodborne diseases in China every year.

An official from the Legislative Affairs Office of the State Council said his department would finish drafting the amendments to the food safety law soon, Xinhua reported. “The

State Council of China promulgated the 2007 National Food Safety special anti-crime program,” said Jiang Yu, spokesperson of the Foreign Ministry, in a press release. “The objective is to further strengthen the supervision and management of food production and processing.”

“The situation of food supervision and inspection in China is improving, but we still have some problems,” said Sun Shuxia, director of the China Health Care Association. “Under the constraints—which include the shortage of equipment and the size of the country—we have not been able to perform the supervision work as well as we expected.”

She added that the Chinese government also has a tendency to be cautious and evasive when confronting food safety problems. “Information needs to be more available to the public,” she said. ●

*Rachel Liu and Wang Fangqing are business writers in China working at Trombly Ltd., a Shanghai-based accredited freelance news bureau. Contact Maria Trombly at Tel: +86.21.6345.9216, maria@tromblyltd.com, www.tromblyltd.com.*

## Smooth collaboration

The US FDA began a joint investigation with regulators from China’s General Administration of Quality Supervision, Inspection and Quarantine on April 30. Both agencies reported their collaboration was smooth and efficient.

“We found them very cooperative,” Walter Batts, deputy director of FDA’s International Programs, told reporters at a May 10 press conference. “We are satisfied they have shared with us the documents they have obtained and anything they found during the investigation.”

However, he said that the FDA has not been able to interview the arrested managers.

# Controlling ingredient interactions

## How raw materials impact extrusion processes and costs



The particle size and pre-grinding of raw materials is especially critical if the final product is a delicate shape. The samples on the left were ground through a 0.8 mm hammermill screen, the ones on the right through a 1.5 mm hammermill screen.

BY BRIAN PLATTNER AND GALEN ROKEY

**F**ormulating raw ingredients, selecting process equipment and processing conditions are independent control regions for extrusion cooking of dry petfoods. But these areas are all also interrelated. The choice of ingredients and how those ingredients react to various extrusion processing conditions are key to keeping formulation and operating costs at a minimum while maintaining high quality standards.

Ingredient selection has a tremendous impact on final product texture, uniformity, extrudability, nutritional quality and economic viability. Within certain limits set by a nutritionist, the extrusion cooking process can produce a wide range of products.

### Preparing raw materials

The particle size of raw materials will affect the texture and uniformity of the final product. The extrusion cooking process can use a broad spectrum of ingredient particle sizes, but it is best for particles to be uniform in size and density to prevent segregation during mixing and transport prior to extrusion.

Achieving proper particle size results in:

- ▶ Improved product appearance;
- ▶ Reduced obstruction of die orifices;
- ▶ Greater ease of cooking; and
- ▶ Improved retention of liquid coatings due to a small cell structure.

Many ingredients are available in grit, meal or flour forms that vary in their water absorption rate. The rate of moisture uptake by individual particles is governed by the principle of water diffusivity. Time, temperature of available moisture, individual particle size, pressure of environment, presence of gelatinized starch and hygroscopicity all affect hydration rate.

A uniform particle size of all ingredients ensures adequate hydration and uniform cooking during the extrusion process, thus preventing hard, partially cooked particles in the final product. If the particle size of the raw ingredients is too large, the final product may contain particles of improperly cooked ingredients, which degrade both the product's appearance and palatability. Additionally, if the raw ingredients' particle size is larger than the die ori-

fices, plugging or partial obstruction of the die openings will result in poor product appearance, decreased operating stability and reduced capacity.

Preparing raw materials usually includes grinding prior to extrusion (see Table 1, p. 32). When whole grains are received into the manufacturing facility, they are often pre-ground to pass through an opening of 1,000  $\mu\text{m}$  larger prior to mixing. The final formulation is then passed through a grinding process just prior to extrusion to achieve the desired final particle size.

Particle size is especially critical if the final product is a delicate shape or the die orifices are small. For die orifices less than 3 mm in diameter, the grind should be fine enough to ensure the largest particles are no larger than one-third of the die opening.

### How different ingredients react

During extrusion cooking of cereal grain and protein blends, the moistened granular or floury materials are generally converted into dough. The starchy components gelatinize, resulting in a substantial uptake of moisture and an



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increase in dough viscosity. Some protein constituents may impact elasticity properties characteristic of hydrated and developed glutinous dough. Other materials with low protein solubility, such as meat meal or fish meal, may contribute less to the adhesive and stretchable functional properties.

### Starch for energy, expansion

As the primary carbohydrate and an important source of energy in petfoods, starch levels can vary from as little as 5% to as much as 60% of the formulation. Levels of 30% in cat and puppy foods and 40% in dry expanded dog foods are typical.

When gelatinization occurs during extrusion cooking, starch becomes soluble and absorbs large quantities of water. It also contributes to expansion and binding in the final product. The amylose fraction of starch has greater binding properties than the amylopectin fraction. Tuber starches such as potato and tapioca, which are high in amylase, are the best choices for binders to improve cohesion of the final product. Pre-cooked starches are sometimes used in formulations, though they cost more.

Starch levels in the final product are dictated by nutritional requirements and the desired bulk density. Increasing the starch content can help decrease the bulk density of extruded products.

### Protein's functional properties

Because cereal grains alone cannot provide the required amino acid balance, proteinaceous ingredients serve to ensure nutritionally complete petfood diets. These ingredients often comprise 25 to 70% of the formulation.

Plant protein sources include soybean meal, wheat gluten and corn gluten meal. These vegetable proteins contribute greatly to the structural and nutritional aspects of petfoods. Due to their low heat treatment, they have good functional properties and assist with expansion and binding during extrusion. They may be used as a protein source in formulating a feed or processed directly to serve as meat extenders in dry and canned petfoods. Vegetable protein

sources can't be used exclusively as they don't provide all essential amino acids.

Animal proteins generally do not contribute structurally to extrusion cooked petfoods. During their preparation, they are often subjected to a high degree of thermal processing, which renders them nonfunctional. The exception are products used in their fresh form or processed in a manner to preserve the protein solubility, such as spray-dried blood meal. The addition of animal protein sources in a formulation allows a complete amino acid profile to be provided for the animal. The most common sources of animal proteins include fresh meat, poultry by-product meal, fish meal, meat and bone meal, blood meal and gelatin.

Many animal proteins and animal by-products are used in their natural, "fresh" state or in a preserved, moist form. Fish solubles, fish wastes and

silage are other excellent sources of protein that can be pumped into the extrusion system in a wet form. Levels of 20 to 40% are common, limited by the amount of water and fat they provide.

### Fat can affect final product

Fats or lipids are an excellent source of energy in petfoods. Fat levels can exceed 30% but usually comprise less than 20% of the complete recipe. If extrusion is carried out at low moistures (<20%) and high temperatures (>150°C), it is quite likely that lipid/starch and lipid/protein complexes will be formed. Free fatty acids and polar lipids are especially reactive in these situations.

Table 2 gives a general guideline for the effect of fat levels on product quality—not only the level but also the source of fat affects the expansion rate during extrusion. Indigenous fats, which are supplied as a component of a particular

**Table 1. Recipe preparation**

Process order	Process step
1	Grind ingredients to proper particle size
2	Weigh individual ingredients
3	Determine that the particle size and density of each ingredient are similar
4	Premix the micro-ingredients (anything less than 1% of the recipe) by hand and add a carrier (part of a major ingredient) if necessary to bring premix portion up to 3% of the total recipe
5	Add major ingredients, then premix (from step four) to mixer and blend for three to five minutes. Slowly add liquids and blend another three to five minutes
6	Grind a final time, if required
7	Use sifter and/or magnet to detect and remove foreign material

**Table 2. Link between fat and quality**

Level of fat in extruded mix	Effect on product quality
0-12%	Little or no effect
12-17%	For each 1% of fat above 12%, the bulk density of the final product will increase 16 g/l
16-22%	Product will have little or no expansion but will remain durable
Above 22%	Final product durability will be poor





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ingredient, tend to have less effect on expansion than fats added in their refined form. For example, a 15% fat formula where the fat is supplied through full-fat canola as a component of that formulation has less effect on expansion than pure canola oil added to provide the same final fat level in the product.

Heating fat sources to 40 to 60°C prior to blending with the balance of the formulation will minimize temperature-dependent viscosity changes, assist in the cooking of the total product and reduce the expansion-depressing effect. Fat sources include tallow, poultry fat, vegetable oils, marine oils and

various blends from all sources. Selecting hard fats (those with high melting points) may minimize fat migration into retail packaging during storage.

### Fiber differences

Reduced-calorie foods for obese or inactive pets are common in the marketplace. These diets contain significant levels of cellulose and hemicellulose. Extrusion conditions are rarely severe enough to affect the apparent digestibility of dietary fiber. However, fibrous ingredients possess bulk densities and hydration properties quite different from traditional ingredients and require different extruder configurations and processing conditions.

High levels of fibrous ingredients tend to disrupt the continuous carbohydrate matrix of the extruded product, resulting in a rough appearance and excessive fines. The starch content of some fibrous ingredients such as wheat midds or rice bran can vary from 16 to 40% depending on the variety, growing conditions and milling properties of the grain. The variable starch levels can dramatically affect the extrusion process.

As more extruded products enter the market, interest is growing in their nutritional value. Although the basic effects of the more traditional thermal processing methods on nutritional quality are well understood, little is known about the combined effects of short-time, high-temperature extrusion of relatively dry feed materials. Understanding the complex phenomena involved will help optimize nutritional quality of these products. ●

*Brian Plattner is the process engineering manager and Galen Rokey the process technology manager for Wenger Manufacturing, Sabetha, Kansas, USA, Tel: +1.785.284.2133, brianp@wenger.com or galenr@wenger.com, www.wenger.com.*

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# Your customers are loyal to value

**T**his month I'll share an online survey of your customers. I asked pet owners to share their thoughts on:

- ▶ The petfood brands they use;
  - ▶ Where they are most likely to buy petfood products;
  - ▶ The value these products bring; and
  - ▶ Their brand likes and dislikes.
- I surveyed pet owners from all over the US, across various demographic profiles. A total of 300 pet owners responded. Of those responding to the survey, 69% were dog owners, 48% were cat owners and 17% were fish owners. The survey has a confidence interval of 6% with 95% confidence.

### Where, what and why

Where do your customers buy their petfoods? Over 38% of pet owners get their petfoods from nonconventional retail channels like private pet stores and veterinarians, or they home-prepare foods for their pets. Thirty-one percent purchase petfoods from specialty retailers like Petco or PetSmart; 21% from mass retailers like Wal-Mart; and 10% from grocery retailers.

I asked petfood buyers to tell me the products they purchase the most and if the product is priced at value. Overall, owners perceive the products they purchase are

**Fifty-five percent of US pet owners think their brands are priced at value.**



**Over 50% said they purchased the same brand for over three years.**

— Huntley Manhertz, Jr.



priced at value compared to competitive alternatives.

Twenty-four percent think their brands are priced somewhat above value; 55% think their brands are priced at value; while 21% say their current brands are priced below value. Examples include the following.

**Priced above value:** Alpo, Authority Harvest, Old Mother Hubbard, Hill's Prescription Diet and Pedigree.

**Priced at value:** Hill's Science Diet, Iams, Wellness and Nutro Max.

**Priced below value:** Caesar, Purina Dog Chow, Flint River, Friskies and Ol' Roy.

When asked to rank the brands they most often use, they rank them as follows: Purina, Iams, Science Diet, Nutro Max and Wellness. The main reasons owners like their brands are:

- ▶ Quality of the product;
- ▶ Their pets are engaged with the product; and
- ▶ The health implications surrounding the ingredients in the product.

When I asked pet owners the length of time they have purchased the brands they use the most,

over 50% said they have purchased the same brand for over three years, 12% between 1-3 years and 37% under a year. Approximately 88% said they prefer a premium brand to a non-premium brand or store brand.

### What do I make of it?

Value, value, value—despite higher costs associated with purchasing premium brands, and in some cases limited distribution, pet owners surveyed are tuned to quality foods with ingredients that provide health benefits. They seek these products from local pet stores or veterinarians that provide consultation that is not readily available at mainstream retail channels.

Once convinced of the value the product provides, owners become loyal customers for three years or more. The bottom line: By being more aggressive in communicating their value proposition to customers, premium brands can likely do well within mainstream retail channels. ●

*Dr. Huntley Manhertz, Jr., is a consumer product goods market researcher and an independent writer. He can be reached at Tel: +1.813.310.0237, E-mail: info@consumerlinkageresearch.com.*

# Pet supplement safety: NRC forms new committee


**A**s most readers are aware, the National Research Council (NRC), under the auspices of the National Academies, published its long-awaited *Nutrient Requirements of Dogs and Cats* last summer (see *Petfood Industry*, August 2006, pp. 28-29). While NRC is not a regulatory body, its reports are considered by agencies such as the US Food and Drug Administration (FDA) in determining policy.

What readers may not know is that another NRC committee, whose report may also affect petfood and pet supplement manufacturers, has been convened. The Committee on Examining the Safety of Dietary Supplements for Horses, Dogs and Cats held its first meeting in Washington, DC, USA, in late April. Its report should be published within a year.

## Background


The Center for Veterinary Medicine in FDA sponsored this committee. Its request for a report from NRC stems from issues with regulation of “dietary supplement” ingredients in products for animals. In the case of products for human consumption, ingredients meeting the statutory definition of “dietary supplement” under the Dietary Supplement Health and Education Act (DSHEA) are effectively granted certain exemptions from the laws applicable to the same ingredients when offered in conventional food form.

For example, echinacea can be a component of a human dietary supplement provided no disease treatment/prevention claims are made (some “support” claims are allowed). How-



**The committee will focus on garlic, lutein and evening primrose oil.**

— David Dzanis



ever, if a chicken soup or similar food product contains the same ingredient, it may be subject to regulation as an adulterated food by virtue of it containing an unapproved food additive, even without claims.

Regardless of this distinction on the human product side, FDA has opined that DSHEA does not apply to any product intended for consumption by animals. This means the prevailing law (Federal Food, Drug and Cosmetic Act) applies to all products containing unapproved ingredients, whether in dietary supplement form or conventional food form.

Despite the agency’s position, many animal products on the market (in either form) contain unapproved ingredients or ingredients for unapproved intended uses. Enforcement actions by federal and state agencies have been taken against violative products. FDA is also reported to be considering the categorization of some of these products in nonconventional food forms as “unapproved drugs of low regulatory priority” to better control the marketplace. However, whether ultimately regulated as “foods” or “drugs,” the concern for safety remains.

FDA would prefer to expend its time and efforts dealing with products that present real safety risks to the

animals consuming them. Traditional means of evaluating the safety of substances are quite extensive and costly, though.

Further, because of the nature of the test and the practical limitations of petfood and pet supplement manufacturers to conduct these studies, these data are unlikely ever to be available. How, then, does FDA assess safety without this information?

## Committee composition and charge

Although its composition has not been finalized at the time of this writing, the committee of eight persons is expected to be composed of experts in the fields of nutrition, toxicology and pharmacology. Its members will be from both academia and industry. Two probable members are employees of petfood manufacturers, although one was selected more for her expertise in equine nutrition rather than nutrition of dogs and cats.

The charge to the committee is to provide a framework for assessing the safety of substances where traditional data may be lacking. To accomplish this, the committee will focus on three specific substances that represent a range of typical dietary supplement ingredients: garlic, lutein and eve-

ning primrose oil. Although garlic is already codified as “generally recognized as safe” (GRAS) as a flavor under FDA regulations, less is known about its safety for other uses at higher levels.

It is anticipated that through the process of collecting, examining and reporting on data relating to the safety of these specific substances, the committee will be able to use its experience to also offer recommendations on methods to assess the safety of ingredients in general. FDA may then choose to follow those recommendations in evaluating products on the market and/or establishing its enforcement priorities.

It is important to note that this committee is to focus on safety in horses, dogs and cats only. By intentionally avoiding the study of use of these substances in food-producing animals, this limits the need to consider the complicating safety issues related to potential residues in milk, meat or eggs. Also important is that for purposes of this study, the committee must assume that the substances in question may be incorporated into the petfood/horse feed by the manufacturer or may be offered as a stand-alone product to either mix in food/feed or to administer to the animal separately from the rest of its diet. In any case, though, it is just for substances intended to be orally consumed.

### Need more information?

Details on the scope of the project, biographies of the committee members and other information can be found online. Updates on the project, including summaries of past meetings and announcements of future meetings, should appear on the National Academies website on a timely basis. The website also provides an opportunity for the public to provide feedback on the project. The page can be reached by going to [www.nas.edu](http://www.nas.edu), clicking on “Current Projects” and then finding the “Examining the Safety of Dietary Supplements for Horses, Dogs and Cats” link.

As the sponsor of the project, FDA may be presumed to be the recipient of the most benefit from the committee’s final report. However, most petfood and pet supplement manufacturers who are using or contemplating use of these types of ingredients may find it useful as well. The public session of the first meeting was attended by a number of interested parties, including the American Feed Industry Association, the United States Pharmacopeia, the National Institute of Health’s Office of Dietary Supplements and the

National Animal Supplement Council. Members of these organizations may also wish to contact these groups for more information. ●

*Dr. Dzanis is a writer and independent consultant for the petfood and animal feed industries on matters related to veterinary nutrition, labeling and regulation. He can be reached at Tel: +1.661.251.3543, Fax: +1.661.251.3203, [dzanis@aol.com](mailto:dzanis@aol.com).*



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## Wheat gluten: wholesome and functional

**W**e have heard a great deal about wheat gluten in the past couple of months due to its central role in the petfood recalls. Unfortunately, wheat gluten was merely the canary in the mine that revealed some less-than-scrupulous business practices.

The contamination and mislabeling of this ingredient has affected almost every corner of the petfood industry, livestock feed industry and has even gotten the attention of the human food industry.

However, the root issue is not about wheat gluten per se, but rather about trade, quality control and inspections. So, despite the undeserved bad press, wheat gluten remains a wholesome and highly functional ingredient for petfoods—and here's why.

### Wholesome ingredient

Wheat gluten originates from one of the most wholesome of ingredients, the same wheat varieties used for bread production. In its simplest description, gluten is merely the protein fraction from grain—in this case wheat. AAFCO defines it as "...the tough, viscid nitrogenous substance remaining when the flour of wheat or other grain is washed to remove the starch." It's really that simple.

While there are numerous processing permutations on this simple theme, the overarching process of producing wheat gluten starts with wheat flour and water. From a dough, more water is added and the starch fraction is washed away, leaving the protein fraction. This protein fraction is then gently dried (flash or spray dried). The net result is a



**Wheat and water: it can't get much more basic than that.**

— Greg Aldrich



cream to tan colored, free-flowing powder. Wheat and water: it can't get much more basic than that.

### Ingredient functionality

Wheat gluten, or vital gluten as it is often called, has visco-elastic properties. When re-hydrated, the resulting dough has extensibility and elasticity. These are best exploited by baking to form "films," retain gases and thermally "set."

The net result is the formation of the cells we see in leavened breads, rolls, buns and bagels. Wheat gluten can also be "formed" during extrusion, can be texturized, drawn into fibers and even "spun." It is also used as a meat extender, as a binder in meat analogs and to fortify the protein content of some snacks and cereals.

These same functional properties have been deployed in the production of petfoods. For example, wheat gluten is often added to rotary-molded biscuit formulas. Wheat gluten is also used as a key ingredient in compression or injection molded bones, chews and toys.

The most common application in petfood, though, is as a binder for re-formed meats and meat pieces. We have become all too aware of this with the recall issues surrounding cuts and

gravy canned foods in the last several months.

In this application, the meat chunks ("cuts") are made from emulsified meats in which a small amount of wheat gluten is added to help bind the meat during the cooking process. This gives the "cut" strength to retain its shape during processing and to hold up in the can during retort.

How wheat gluten is able to do all these things rests in its protein makeup, specifically, two predominant proteins: glutenin and gliadin. The glutenin protein [the acetic acid extractable] fraction contributes to the elasticity and the gliadin [the ethanol extractable] fraction to the extensibility and stickiness.

The amino acid composition of wheat gluten also possesses a low level of polarity, contains a high proportion of glutamic acid (glutamine) and is low in basic amino acids and high in hydrophobic side chains. These properties aid wheat gluten in its ability to hydrate, interact during dough formation and become structurally stable. Other factors must be monitored as well to assure functional quality, such as proximate analysis, water absorption, rate of hydration and now contamination.

Wheat gluten is sold primarily on

protein as measured by nitrogen (N) content. Depending upon the seller, it may be sold at 80% using N x 6.25 or 75% protein using N x 5.7 on a dry weight basis.

The 6.25 coefficient is standard for feed proteins, but the 5.7 coefficient is a more accurate representation of the N content of wheat gluten amino acids. Any non-protein nitrogen source could ostensibly elevate the computed protein; but it would likely decrease the functional properties of the gluten.

Functional tests are common in the food industry (e.g., increase in loaf volume, extensibility, etc.) and could potentially be applied to gluten purchased in the petfood industry. Adding functionality testing to wheat gluten quality assurance measures, even if the ingredient is not intended for that purpose, might reduce chances of receiving adulterated product.

Wheat gluten is not commonly used as a primary protein source for animals. This is because nutritionally wheat gluten has a lower protein quality "score" when compared to soy (Burns et al., 1982) due to its high proportion of nonessential amino acids (e.g., glutamine).

### Hypersensitivity

While quite digestible (Savoie et al., 1989) the side story to wheat gluten becomes less about nutrient utilization and more about food hypersensitivity or allergic reactions in dogs and cats.

Wheat protein antigens are reputed to be one of the leading causes of food hypersensitivities in pets. The principal sensitizing proteins are the gliadins and glutenins and, to a lesser extent, the albumins and globulins (Buchanan et al., 1997), the same proteins that provide functionality.

While these hypersensitivities may be profound for affected animals, the number of cases seems to be low and a great deal of wheat gluten is used in petfoods and treats without incident.

### Bottom line

We have been consuming wheat gluten in our diets since we first learned to

make bread. There is no doubt that vital wheat gluten will continue to be an important ingredient in pet and human foods for the foreseeable future.

While this recent episode was not to any petfood company's or ingredient supplier's liking, the truth of the matter is that despite a desire by many to purchase wheat gluten produced at home, the importation of this ingredient will continue to be necessary. The more critical challenge will be maintaining heightened diligence with suppliers and discovering methods to find problems of contamination before they become an issue. ●

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*Dr. Greg Aldrich is president of Pet Food & Ingredient Technology Inc., which facilitates innovations in foods and ingredients for companion animals. Tel: +1.785.271.0238, aldrich4@cox.*

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# Research Notes

## Zinc intoxication in dogs: 19 cases

This study was done to help determine physical examination findings, clinicopathologic changes and prognosis in dogs with zinc toxicosis. In a retrospective case series, 19 dogs with zinc toxicosis were studied. Medical records from 1991 through 2003 were searched for animals with a diagnosis of zinc toxicosis.

Information concerning signalment, body weight, historical findings, initial owner complaints, physical examination findings, clinicopathologic findings, blood zinc concentrations, source of zinc, treatments given, duration of hospital stay and outcome was collected.

The most common historical findings were vomiting (n = 14) and pigmenturia (12). The most common clinicopathologic findings were anemia (n = 19) and hyperbilirubinemia (12). Median age was 1.3 years, and median weight was 5.6 kg (12.3 lb). The prognosis was favorable, with 17 dogs surviving after a median hospital stay of two days.

Hemolytic anemia as a result of zinc toxicosis appeared to affect young small-breed dogs more frequently than older

large-breed dogs. The prognosis with treatment is good, and most affected dogs had a short hospital stay.

**Source:** C.M. Gurnee, K.J. Drobatz and M.J. Ryan, 2007. Zinc intoxication in dogs: 19 cases (1991–2003). *JAVMA* 230(8):1174-1179.

## Taurine synthesis rate relates to MER

Diet-induced (taurine deficiency) dilated cardiomyopathy is reported more in large than small dogs, possibly because taurine biosynthesis rate (TBR) is lower in large than small dogs. The TBR in six mongrels (37.9 ± 2.1 kg) and six beagles (12.8 ± 0.4 kg) was determined from the fractional dilution rate of urinary [1,2-<sup>2</sup>H<sub>2</sub>]-taurine, (d4-tau). All dogs were given a 15.6% protein, 0.60% sulfur amino acid (SAA) diet in amounts to maintain an ideal body condition score.

After three months, 14.6 mg/kg body weight of d4-tau was given orally and TBR determined from d4-tau to taurine ratio in urine collected each day for six days. Enrichments of d4-tau were determined by GC-MS. Thereafter, mongrels and beagles were paired by ranking of SAA intake per metabolic body weight per kg<sup>0.75</sup>. Each pair received the same amount of diet/kg<sup>0.75</sup> for two weeks, then TBR was again determined. Concentrations of taurine in plasma, blood and urine and concentrations of plasma thiols were measured during each TBR determination.

In Experiment 1, TBR and taurine concentrations in plasma and urine of mongrels were lower (P < 0.05) than those of beagles. In Experiment 2, TBR and taurine concentrations in blood and plasma of mongrels were lower (P < 0.05) than beagles. Together, the results support the hypothesis that large compared with small dogs have lower TBR when fed diets near-limiting in dietary SAA, but adequate to maintain ideal body condition.

**Source:** K.S. Ko et al., 2007. Differences in taurine synthesis rate among dogs relate to differences in their MER. *J Nutr* 137(5):1171-5.

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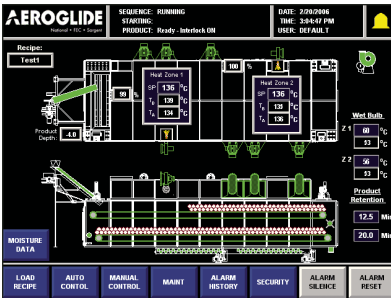
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(*J Nutr* 137(5):1171-5): The results support the hypothesis that large compared with small dogs have lower TBR when fed diets near-limiting in dietary SAA, but adequate to maintain ideal body condition.





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Aeroglide's Advanced Process Controls monitor the key thermal processing parameters of the equipment and product, and automatically adjust the equipment to meet final process target specifications. The system allows operators to control product moisture content and reduce product moisture variability.

**Aeroglide Corp.**  
1.919.851.2000  
[www.aeroglide.com](http://www.aeroglide.com)



## Clear, high-moisture barrier lidstock

Ampac Flexibles, a unit of Ampac Packaging LLC, introduces a new clear high-moisture barrier lidstock that can seal to trays, cups and other containers made from a wide variety of plastic materials. Flexi-Free 6985 is said to be the first high-moisture barrier lidstock without a foil layer suitable for universal application.

**Ampac Flexibles**  
1.513.671.1777  
[www.ampaconline.com](http://www.ampaconline.com)

## On-line water activity control system

Drying Technology Inc. announces the development of an on-line water activity



ty control system to prevent the growth of mold and other harmful organisms. This new control system is an extension of their Delta T moisture control technology. The Delta T uses a patented, "inside the dryer" moisture sensor to achieve moisture control of products exiting dryers, ovens, etc.

**Drying Technology Inc.**  
1.409.385.6422  
[www.moisturecontrols.com](http://www.moisturecontrols.com)

## Automatic bagging machine



American-Newlong's 3CM-PDS high-speed Automatic Bagging Machine bags up to 2,000 bags/hour of bags

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## Meeting Planner *events*

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### 2007

► **ADSA/ASAS/PSA Joint Annual Meeting**, July 8-12, 2007, San Antonio, Texas, USA. Contact: Poultry Science Association, 1111 N. Dunlap Ave., Savoy, IL 61874 USA, Tel: +1.217.356.5285, Fax: +1.217.398.4119, [www.poultryscience.org](http://www.poultryscience.org).

► **AVMA/AAAP Annual Convention**, July 14-18, 2007, Washington, D.C., USA. Contact: AVMA, Tel: +1.847.925.8070, Fax: +1.847.925.1329, [avmainfo@avma.org](mailto:avmainfo@avma.org), [www.avma.org](http://www.avma.org).

► **IFT Annual Meeting and Food Expo**, July 26-30, 2007, Chicago, Illinois, USA. Contact: Institute of Food Technologists, Tel: +1.312.782.8424, Fax: +1.312.782.0045, [info@ift.org](mailto:info@ift.org), [www.ift.org](http://www.ift.org).

► **AAFCO Annual Meeting**, August 1-4, 2007, Amway Grand Plaza Hotel, Grand Rapids, Michigan, USA. Contact: Gina Davis, Tel: +1.517.241.2084, [DavisG9@michigan.gov](mailto:DavisG9@michigan.gov), [www.aacomichigan2007.com](http://www.aacomichigan2007.com).

► **AFIA Liquid Feed Symposium**, September 5-7, 2007, Phoenix, Arizona, USA. Contact: American Feed Industry Association, Tel: +1.703.524.0810, Fax: +1.703.524.1921, [afia@afia.org](mailto:afia@afia.org), [www.afia.org](http://www.afia.org).

► **National Annual Pet Industry Trade Show**, September 16-17, 2007, Toronto, Ontario, Canada. Contact: Pet Industry Joint Advisory Council – Canada (PIJAC), Tel: +1.613.834.2111, Fax: +1.613.834.4854, [executiveoffice@pijaccanada.com](mailto:executiveoffice@pijaccanada.com), [www.pijaccanada.com](http://www.pijaccanada.com).

► **GLEE/GLEE PETINDEX**, September 16-18, 2007, National Exhibition Center, Birmingham, England. Contact: Adam Ash, Tel: +1.609.921.0222, [reg@whitehoundadv.com](mailto:reg@whitehoundadv.com).

► **SuperZoo West**, September 18-20, 2007, Mandalay Bay Convention Center, Las Vegas, Nevada, USA. Contact: World Wide Pet Industry Association (WWPIA), Tel: +1.800.999.7295, [www.wwpia.org](http://www.wwpia.org).

► **Sizoo**, September 20-23, 2007, Barcelona, Spain. Contact: Tel: +34.93.233.2000, [www.sizoo.com](http://www.sizoo.com).

► **Pet South America**, September 26-28, 2007, Transamerica Expo Center, Sao Paulo, Brazil. Contact: VNU Business Media, Tel: +55.11.4613.2000, Fax: +55.11.4613.2001, [pet@vnu.com.br](mailto:pet@vnu.com.br), [www.vnu.com.br](http://www.vnu.com.br).

► **AACC Annual Meeting**, October 7-10, 2007, San Antonio Convention Center, San Antonio, Texas, USA. Contact: American Association of Cereal Chemists, Tel: +1.651.454.7250, Fax: +1.651.454.0766, [aacc@scisoc.org](mailto:aacc@scisoc.org), [www.aaccnet.org](http://www.aaccnet.org).

► **PetExpo**, October 10-16, 2007, Melbourne Exhibition & Convention Center, Melbourne, Australia. Contact: Pet Industry Association of Australia Ltd. (PIAA), Tel: +61.2.9659.5811, Fax: +61.2.9659.5822, [info@piaa.net.au](mailto:info@piaa.net.au), [www.piaa.net.au](http://www.piaa.net.au).

► **H.H. Backer Christmas Trade Show**, October 12-14, 2007, Rosemont (Chicago), Illinois, USA. Contact: H.H. Backer Associates Inc., Tel: +1.312.663.4040, Fax: +1.312.663.5676, [hbacker@hhbacker.com](mailto:hbacker@hhbacker.com), [www.hhbacker.com](http://www.hhbacker.com).

► **PFI Annual Meeting**, October 15-16, 2007, Omni Shoreham Hotel, Washington, D.C., USA. Contact: PFI, 2025 M St. N.W., Washington, D.C. 20036 USA, Tel: +1.202.367.1120, [info@petfoodinstitute.org](mailto:info@petfoodinstitute.org), [www.petfoodinstitute.org](http://www.petfoodinstitute.org).

► **NRA Annual Convention**, October 23-27, 2007, Miami, Florida, USA. Contact: National Renderers Association Inc., 801 N. Fairfax St., Suite 207, Alexandria, Virginia 22314 USA, Tel: +1.703.683.0155, Fax: +1.703.683.2626, [renderers@nationalrenderers.com](mailto:renderers@nationalrenderers.com), [www.renderers.org](http://www.renderers.org).

## 2008

► **North American Veterinary Conference (NAVC)**, January 19-23, 2008, Orlando, Florida, USA. Contact: NAVC, 5003 S.W. 41st Blvd., Gainesville, Florida 32608 USA, Tel: +1.352.375.5672, Fax: +1.352.375.4145, [info@tnavc.org](mailto:info@tnavc.org), [www.tnavc.org](http://www.tnavc.org).

► **Petfood Forum Asia**, March 5, 2008, Bangkok, Thailand. Contact: Debbie Phillips-Donaldson, Watt Publishing Co., 1350 E. Touhy Ave., Des Plaines, Illinois 60018 USA, Fax: +1.847.390.7100, [dphillips@wattnet.net](mailto:dphillips@wattnet.net), [www.petfoodindustry.com](http://www.petfoodindustry.com).

► **Victam Asia**, March 5-7, 2008, Bangkok, Thailand. Contact: Henk van de Bunt, Victam International B.V., P.O. Box 197, 3860 AD Nijkerk, Netherlands, Tel: +31.33.246.4404, Fax: +31.33.246.4706, [expo@victam.com](mailto:expo@victam.com), [www.victam.com](http://www.victam.com).

► **Petfood Forum 2008**, April 14-16, 2008, Hyatt Regency O'Hare, Chicago, Illinois, USA. Contact: Debbie Phillips-Donaldson, Watt Pub-

lishing Co., 1350 E. Touhy Ave., Des Plaines, Illinois 60018 USA, Fax: +1.847.390.7100, [dphillips@wattnet.net](mailto:dphillips@wattnet.net), [www.petfoodindustry.com](http://www.petfoodindustry.com).

► **Petfood Focus**, April 16-17, 2008, Hyatt Regency O'Hare, Chicago, Illinois, USA. Contact: Debbie Phillips-Donaldson, Watt Publishing Co., 1350 E. Touhy Ave., Des Plaines, Illinois 60018 USA, Fax: +1.847.390.7100, [dphillips@wattnet.net](mailto:dphillips@wattnet.net), [www.petfoodindustry.com](http://www.petfoodindustry.com).

► **H.H. Backer Spring Trade Show**, May 16-18, 2008, Baltimore, Maryland, USA. Contact: H.H. Backer Associates Inc., 200 S. Michigan Ave., Suite 840, Chicago, Illinois 60604 USA, Tel: +1.312.663.4040, Fax: +1.312.663.5676, [hbacker@hhbacker.com](mailto:hbacker@hhbacker.com), [www.hhbacker.com](http://www.hhbacker.com).

► **Interzoo**, May 22-25, 2008, Exhibition Centre Nuernberg, Nuernberg, Germany. Contact: WZF Wirtschaftsgemeinschaft, Zoologischer Fachbetriebe GmbH, Postfach 14 20, 63204 Langen, Germany, Tel: +49.911.86.068646, Fax: +49.911.86.068640, [interzoo@nuernbergmesse.de](mailto:interzoo@nuernbergmesse.de), [www.interzoo.com](http://www.interzoo.com).

► **IFT Annual Meeting and Food Expo**, June 26-30, 2008, New Orleans, Louisiana, USA. Contact: Institute of Food Technologists, 525 W. Van Buren, Suite 1000, Chicago, Illinois 60607 USA, Tel: +1.312.782.8424, Fax: +1.312.782.0045, [info@ift.org](mailto:info@ift.org), [www.ift.org](http://www.ift.org).

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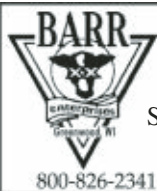
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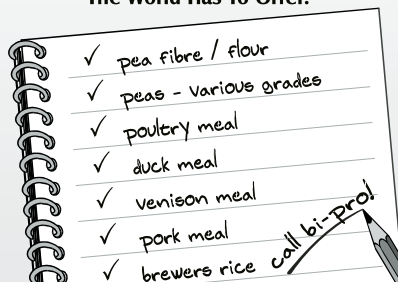
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**Bruce Plantz**, Vice President, Director of Content  
bplantz@wattnet.net

## EDITORIAL STAFF

**Debbie Phillips-Donaldson**, Editor-in-Chief  
dphillips@wattnet.net

**Tim Phillips**, DVM, Editor  
tphillips@wattnet.net

**Jenny Kvamme**, DVM, Managing Editor  
jkvamme@wattnet.net

**Peter Best**, European Editor  
best@watt-4.demon.co.uk

**Liz Crosby**, Art Director

## EDITORIAL & SALES OFFICE

**PETFOOD INDUSTRY**, 122 S. Wesley Ave.,  
Mt. Morris, IL 61054-1497 USA. Tel: +1.815.734.4171,  
Fax: 1.815.734.5649 (Editorial), 1.815.734.5663 (Sales).

## USA ADVERTISING SALES

**Steve Akins**, Publisher  
sakins@wattnet.net

**Jim Francis**, Sales Manager  
jfrancis@wattnet.net

**Ginny Stadel**, Sales Associate  
gstadel@wattnet.net

## EUROPE ADVERTISING SALES

**Tineke van Spanje**, European Regional Sales Manager  
spanje@xs4all.nl  
Tel: +31.495.526155, Fax: +31.495.525126

**Sunny Li** (CHINA only)  
Lddg75@163.com  
Tel: +86.21.64474625

## PUBLISHING SERVICES

**James Wessel**, Circulation Director  
For subscriptions, address changes, past copies—  
jwessel@wattnet.net

**Robert Portillo**, Production Manager  
For advertising material, deadlines and processing—  
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## SUBSCRIPTION INQUIRIES/ CHANGE OF ADDRESS

Contact the Circulation Department at 122 S. Wesley Ave., Mt. Morris, Illinois 61054-1497 USA. Tel: +1.815.734.4171; Fax: +1.815.734.7021; E-mail: jwessel@wattnet.net. Subscription print edition prices: USA \$84.00/yr, Canada \$102.00/yr, Outside USA & Canada via Airmail \$144.00/yr; \$14.00 per copy unless marked. Digital edition sent by email: \$36.00/yr. Prices in US dollars. Business or occupation information must accompany each subscription order. For change of address, contact the circulation department listed above and give BOTH old and new address.

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# Reforming the global supply chain

**A**fter two months of the seemingly endless turmoil, chaos and heartbreak of the petfood recall situation—arguably the most significant thing to hit our industry in many years—one theme cries out loud and clear. The global food supply chain, for both pets and humans, needs serious reform.

By now everyone knows some of the petfood contaminated with melamine and/or cyanuric acid ended up going into animal feed via the common practice of selling leftover materials from petfood plants to feed producers. That feed was eaten by chickens and hogs that entered the US human food supply.

While any melamine or cyanuric acid consumed by humans would have been extremely diluted, this chain of events—and the realization that the animal and human food chains are so inextricably linked—seemed to take some people by surprise. What may be even more startling is that the US Food and Drug Administration (FDA), the main agency charged with safeguarding the US food supply, isn't sure if any tainted ingredients entered the human food chain by a more direct route.

## Not limited to petfood

Media reports have lambasted the petfood industry over a perceived lack of quality control and supplier oversight in the wake of the recalls, but it's becoming clear that existing problems and potential dangers in the US are not limited to petfood. For proof, you need look no further than the *Salmonella* contamination of peanut butter earlier this year or the *E. coli* in spinach last year.

On p. 28 of this issue, a story about the contaminated petfood ingredients

**Existing problems and potential dangers are not limited to petfood.**

— Debbie Phillips-Donaldson



from the China perspective points out how uncoordinated and disjointed Chinese food regulations are. Joanna Brent, team leader for the World Health Organization in China, says nine governmental institutions have some authority over food safety, with another eight taking secondary roles.

Considering that China is still developing as a modern economy and society, its situation may not be all that shocking. But this is: In the US, 12 different federal agencies have oversight of the food supply, operating under 35 health-related statutes and more than 50 interagency agreements and reporting to 28 US Congressional committees. This is according to a 1998 study by the Institute of Medicine and National Research Council called *Ensuring Safe Food: From Production to Consumption* (available at <http://books.google.com>), which was referenced in a May editorial in the *Lancet* ([www.thelancet.com](http://www.thelancet.com)).

## No quick fix

Though the US Congress has introduced legislation to consolidate food safety oversight under the FDA, there's no guarantee that will lead to better funding and staffing so the agency can carry out even its existing tasks, let alone new ones. (Currently the FDA oversees 80% of the US food supply

but receives only 20% of the funding, according to CNN.com.) And reform won't come quickly; new regulations and laws can take months or years for passage and implementation.

Perhaps a faster and at least partial solution is for industry to step up. ChemNutra, the supplier that imported the contaminated wheat flour, is calling for a summit on petfood ingredients to draft voluntary import standards (see "Industry News," p. 13). Some petfood manufacturers are increasing their oversight of ingredient sourcing and suppliers, as well as contract manufacturing. (Though some companies' pledges—that they will no longer outsource their manufacturing or use materials imported from China—seem rather unrealistic.)

There's no doubt that in the wake of the recalls, the industry must change. And those changes will affect business models and the economics of the supply chain. Let's hope pet owners—who have proven to spend increasingly on their beloved furry charges—are willing to pay even more to ensure the safety of their pets' food. ●

*Phillips-Donaldson is editor-in-chief of Petfood Industry magazine. Email her at [dphillips@wattnet.net](mailto:dphillips@wattnet.net).*

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