

## INGREDIENTS

# under the microscope

## Laboratories discuss ingredient testing worldwide

BY JENNY KVAMME, DVM

With the recent petfood recall fresh on the mind of the industry, food safety testing is a topic of interest to just about everyone involved in petfood production. *Petfood Industry* asked several analytical laboratories their opinion on the top safety issues today in petfood production. We also asked them to give us some insight into the most current testing technologies available.

According to Lars Reimann, chief scientific officer for Eurofins Scientific Inc., three main groups of top ingredient safety issues face petfood manufacturers today. These issues are:

- ▶ Adulteration/mislabeling (GMOs, diluting more expensive products with less expensive products, natural/organic versus regular products);
- ▶ Known toxic residues (allergens, heavy metals, pesticides, drug residues, dioxins, microbial contamination); and
- ▶ Unknown residues (melamine, acetaminophen, bioterrorism toxins, unknown toxic by-products formed during the manufacturing process such as heat-generated toxins

like acrylamide, benzene, furans and 3-monochloropropane-1,2-diol).

### Global sourcing expands the issues

Reimann notes that the challenge to the industry is to ensure that the ingredients/products it buys at a good price are sufficiently safe for their intended use. Global sourcing has expanded the issues that need to be considered, as well as reduced the responsibility/trust factor between buyer and seller. However, technologies have also evolved that allow regulators and others to test for an ever-increasing number of residues present with increasingly lower detection limits. The real challenge is to educate the consumer, regulators and the industry itself on what constitutes “real” hazards versus “perceived” hazards, he says.

Reimann believes there are improvements continuously being made on the analytics front. “However, the scope of compounds of concern seems to grow as fast (or faster) than the improvements in analytical instrumentation and processes,” he says.

## Top ingredient analysis issues:

- Adulteration/mislabeled;
- Drug residues, pesticides;
- Mycotoxins;
- Microorganisms;
- GMOs; and
- Monitoring and verifying ingredient source(s).

## Analytical companies continue to improve turnaround times.

—Dr. Scott Brooks

New technologies and new applications for existing technologies are rising to meet the need for more comprehensive screening of raw ingredients, according to Jackson. Near-infrared spectroscopy (NIR), the electronic nose and high-performance liquid chromatography (with mass spectrometry for increased sensitivity and specificity) are just a few she mentions. Each of these technologies offers advantages in detecting undesirable or foreign components in a feed ingredient. In addition, rapid technologies make it possible to screen ingredients as they arrive at the plant.

### France and Germany: similar/different issues

Outside the US, perception of the top ingredient safety issues facing manufacturers differs slightly. Michele Lees of Eurofins in France notes that the most pressing issues include adulteration of ingredients; external contaminants; accidental contamination from dioxins, etc.; naturally occurring contaminants (or contaminants formed from nontoxic ingredients); mycotoxins; and toxic chemicals formed by reaction of nontoxic ingredients (benzene, furan).

According to Werner Nader of Eurofins in Germany, ingredient scandals in the feed industry over the past decade have shadowed the petfood industry in that country. Genetically modified ingredients (a politically charged issue in Europe) in petfood are also quite commonly seen due to cross-contamination at the supplier. Because of the common supply chain for ingredients for feed and petfood, strict controls on the supply side have to be maintained, he says.

### Monitoring quality is an ongoing process

Patricia Jackson, business development manager, diagnostics for VICAM, realizes that in today's global marketplace, ingredient suppliers face the challenge of providing a consistent and traceable supply of ingredients that will meet the standards of a diverse market. She says that petfood manufacturers do a "fantastic job of monitoring the quality of their ingredients and finished products," so the most likely source of safety issues could be from unexpected or unintended components added to an ingredient prior to its delivery.

### Audit programs are key

Dr. Scott Brooks, chief operating officer for Food Safety Net Services, recognizes that robust quality assurance programs to verify the quality and safety of ingredients are of critical importance in the safety of petfoods. According to Brooks, these programs, if executed with skill, address ingredient safety issues systematically rather than attempting to tackle individual issues (e.g., melamine). "Petfood companies need to ensure microbial, chemical and physical specifications are set for all ingredients and establish a program to monitor incoming ingredient quality. The programs should include requirements for certificates of analysis with incoming shipments and, importantly, a sampling and testing program to verify critical specification parameters," he says.

Analytical companies continue to improve turnaround times for results for both chemical and microbial contaminants, according to Brooks. Gene-based assays for microbes are speeding results and will improve with development of DNA microarrays and benefit from growth of nanotechnology applications. In addition to advanced instrumentation capabilities, lateral flow tests will continue to be developed to provide practical, rapid screening for chemical and microbial contaminants, he notes. ●

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