



# 2017 Pet Food Sampling Project

## Background

The Wisconsin Department of Agriculture, Trade and Consumer Protection's (DATCP) commercial feed program is in place to assure the public and manufacturers that animal feed and feed ingredients are unadulterated, meet label guarantees, and are safe and effective for use. Additionally, the program serves to create a regulatory environment ensuring that all businesses may distribute their animal feed and feed ingredients fairly.

Pet food is different from non-pet food in that it is typically a sole source diet; there is not a supplemental source of nutrition. The Association of American Feed Control Officials (AAFCO), in cooperation with pet nutrition experts, has established nutrient profiles for dogs and cats, in the categories of growth/reproduction and maintenance. Each nutrient profile is intended to meet the diet needs of a dog or cat given the described physiological state.

The feed program regularly conducts surveillance sampling of animal feeds to ensure the products meet label guarantees. According to the American Pet Products Association, consumers spent \$28.23 billion on pet food in 2016<sup>5</sup>. Consumers, and the feed program, expect pet foods to meet label guarantees and the nutritive requirements of the intended species.

The commercial feed program conducted a similar project in 2001. The results yielded an 80.56% passing rate. Of the 14 failed samples, 9 failed to meet amino acid levels established by the AAFCO nutritional profile. Overall, the prior project resulted in over 80% confidence that the diets distributed in Wisconsin adequately met the nutrient requirements of dogs and cats for growth, maintenance, and reproductive health, and met the listed label guarantees.

The goal of the 2017 pet food sampling project was to survey the same industry, with hopes of finding similar or better results.

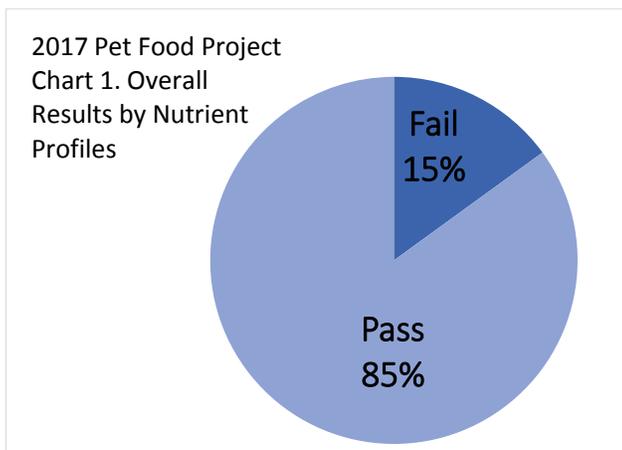
## 2017 Project

During March and April 2017, DATCP collected 100 samples of canned and dry dog and cat foods<sup>6</sup> from 22 companies. All samples were collected and purchased at retail pet food locations. Samples were first selected from pet foods manufactured by companies located within Wisconsin, and second from pet foods manufactured by companies located outside of Wisconsin. Pricing was not a factor in this project.

Analysis for each sample included nearly the full array of required nutrients in the AAFCO dog and cat nutrient profiles for maintenance and for growth and reproduction. Table 1 lists the nutrients analyzed during the project. The nutrient

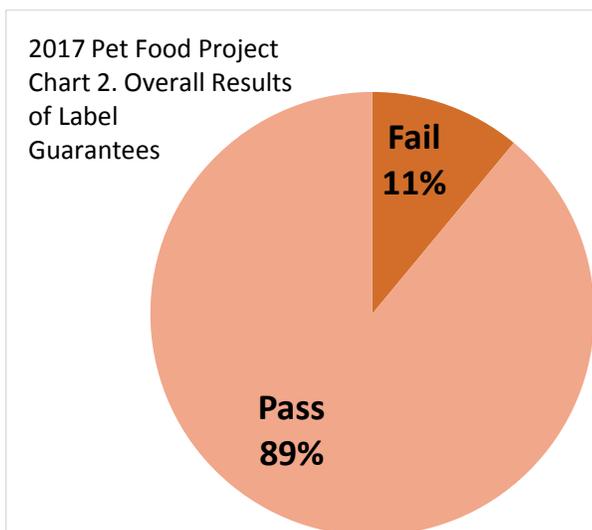
2017 Pet Food Project - TABLE 1	
Cat Food	Dog Food
<b>Required Guarantees:</b> Crude Protein (min) Crude Fat (min) Crude Fiber (max) <sup>1</sup> Moisture (max)	<b>Required Guarantees:</b> Crude Protein (min) Crude Fat (min) Crude Fiber (max) <sup>1</sup> Moisture (max)
<b>Amino Acids:</b> (minimum unless specified) Arginine Histidine Isoleucine Leucine Lysine Methionine (min & max) <sup>2</sup> Phenylalanine Taurine Threonine Tryptophan (min & max) <sup>3</sup> Valine	<b>Amino Acids:</b> (minimum unless specified) Arginine Histidine Isoleucine Leucine Lysine Methionine <sup>2</sup> Phenylalanine Threonine Tryptophan (min & max) Valine
<b>Other Analytes:</b> (minimum unless specified) <sup>4</sup> Calcium Phosphorus Iron Zinc Potassium Selenium Magnesium Manganese Vitamin A (min & max)	<b>Other Analytes:</b> (minimum unless specified) Calcium (min & max) Phosphorus (min & max) Ca:P ratio (min & max) Iron Zinc Potassium Selenium (min & max) Magnesium Manganese Vitamin A (min & max)

profiles used as standards were selected based on the nutritional adequacy statement on the pet food label. If a food was labeled for all life stages, it was measured against the nutrient profile with the highest nutritive requirements: the growth and reproduction profile. The overall results of the samples as compared to the AAFCO nutrient profiles are reported in Chart 1.



In addition, the label guarantees were compared to the sample results. Label guarantees can be, and often are, different from the AAFCO nutrient profile requirements for certain nutrients. Not all nutrients in the profiles are guaranteed on the labels; typically 4 to 10 guarantees are listed on the label, including the required 4 guarantees of minimum crude protein, minimum crude fat, maximum crude fiber, and maximum moisture. Only nutrients that were both analyzed and guaranteed were assessed for this component of the project. The overall results of the label guarantees compared to the sample results are reported in Chart 2.

The sample results were communicated to manufacturers via a letter, accompanied by the sample results for pet foods manufactured by that company.



It should be noted that this project was designed to be only a snapshot of pet food products sold in Wisconsin; the quantity of samples was insufficient to be representative of all pet foods distributed in the state.

#### *Analysis*

Overall, 85% of samples met the analytical comparison to the AAFCO nutrient profiles. Of the 15 samples that failed to meet the corresponding AAFCO nutrient profile, 10 samples failed to meet only 1 analyte.

The comprehensive nutrient profile analysis yielded fails for minerals (phosphorus, potassium, iron, calcium, and selenium), amino acids (threonine, histidine, phenylalanine, and isoleucine), protein, and vitamin A. Generally speaking,

the fails were by a small margin, falling short of the required nutrient amount by tenths or even hundredths of a unit. Notable observations of the individual analytes include:

- In one sample, the mineral iron failed to meet the nutrient profile requirements by 15.5 mg/kg.
- One canned dog food sample exceeded the calcium maximum by about 26%; however, the sample was still within the AAFCO nutrient profile's calcium to phosphorus ratio (Ca:P) maximum, 2:1.
- Two samples failed to demonstrate any presence of Vitamin A at all, whereas one sample tested double the maximum limit for Vitamin A.

It is worth mentioning that Vitamin A is highly unstable; it oxidizes through the manufacturing process. Degradation to the nutrient comes from heat and pressure, two prevalent components to pet food manufacturing. Time can play a factor as well; the longer the food is stored, the more the vitamin will degrade, although not at the rate experienced during the manufacturing process. The exceedance is likely an effort by the manufacturer to ensure the animal receives what it needs, even after all the heat and pressure of extruding the pet kibble, and after the time it takes to move the finished food from warehouse to retail to purchase.

2017 PET FOOD PROJECT - TABLE 2

SAMPLE #	Analyte (minimum unless noted)	Label Guarantee	Calculated Result (AF)
17-002501	Fat	17%	13.85%
17-002959	Magnesium	0.028%	0.016%
17-002970	Magnesium	0.090%	0.173%
17-002972	Magnesium	0.025%	0.036%
17-002499	Phosphorus	1.00%	0.84%
17-002288	Protein	21%	19.37%
17-002335	Protein	34%	30.23%
17-002502	Protein	35%	32.35%
17-002506	Protein	8.00%	6.89%
17-002957	Protein	10.00%	9.07%
17-002970	Taurine	0.40%	0.24%
17-002216	Vitamin A	13,000 IU/kg	8800 IU /kg

Of the samples, 89 met the label guarantees. Only one of the 11 samples that failed to meet label guarantees failed to meet more than 1 guarantee.

The analysis result for moisture in the diet helped the feed program to calculate the nutrient values on an as-fed basis. These values were then compared to the label guarantees<sup>7</sup>. Fails were noted for the minerals magnesium and phosphorus, the amino acid taurine, Vitamin A, protein, and fat. The fails in this assessment had a wider variance; see Table 2 for the comparison.

*Conclusions*

Overall, the project resulted in a confidence level of 85% that pet food diets are meeting the AAFCO nutrient profile requirements.

The concern that arose from the samples’ failure to meet label guarantees was from the consumer protection perspective, rather than the nutritional adequacy standpoint. Consumers are paying for pet foods with the mindset that the diets are truthfully labeled, and that includes the ability of the pet food to meet the label guarantees. Concerns with the label guarantees were communicated to the manufacturers, along with their pet food sample results.

*Future Considerations*

The 2017 pet food study demonstrated pet food diets are meeting the nutritional requirements of the species and life stage for which they are intended. Research of other pet food studies demonstrate that the nutritional adequacy of pet foods is not of the greatest concern, but rather the presence of ingredients not listed, or listed ingredients not present in the diet<sup>8</sup>, in addition to labeling violations that relate to buying trends. An example of this would be the analysis of vegetarian or vegan canine diets for animal DNA, when those products claim no animal products or animal by-products are within the ingredients of the diet.

When resources allow, future projects might best serve the constituents of Wisconsin by looking into the concerns voiced by them. The 2017 project justifies continued surveillance of nutritional adequacy to uphold the mission of the Department. Supplemental projects might include pathogen testing in raw pet food diets or DNA testing of canned and extruded diets to assess if ingredient statements accurately reflect the protein sources in the diet.

<sup>1</sup> A maximum crude fiber guarantee is required on every dog and cat food label, however, fiber is not a required nutrient by the AAFCO Nutrient Profiles for either species.  
<sup>2</sup> The methionine analysis failed to return quality results. Upon discovery, all subsequent analysis was cancelled and all previous analysis data was ignored for purposes of this project.  
<sup>3</sup> Tryptophan analysis failed to return quality results. The discovery was immediate and all analysis was cancelled.  
<sup>4</sup> Copper analysis was cancelled after the analysis tests were set; the analyte shows on reports, however, no analysis was conducted and no results were reported.  
<sup>5</sup> Food total is based on PFI research consultant Davenport Co’s “Packaged Facts: Pet Food in the U.S. 2015-2020,” petfoodindustry.com’s “2015 Industry Report,” and Euromonitor International Pet Care in the US plus new information generated by the US Bureau of Labor Statistics (US BLS). [http://www.americanpetproducts.org/press\\_industrytrends.asp](http://www.americanpetproducts.org/press_industrytrends.asp)  
<sup>6</sup> Raw diets and dehydrated diets were not included in the 2017 project.  
<sup>7</sup> Label guarantees not recognized as required nutrients by the AAFCO Nutrient Profiles were not reviewed as a part of this project.  
<sup>8</sup>A. Cima, Greg. “What’s in Pet Food?” American Veterinary Medical Association, Apr. 2016. <https://www.avma.org/News/JAVMANews/Pages/150515a.aspx>. Accessed 6 July 2017.  
<sup>8</sup> (cont’d) Case, Linda. “The Science Dog: What’s in Your (Vegetarian) Food?” May 2016. <https://thesciencedog.wordpress.com/tag/pet-food-label/>. Accessed 6 July 2017.  
 i. Kanakubo K, Fascetti AJ, Larsen JA. Assessment of protein and amino acid concentrations and labeling adequacy of commercial vegetarian diets formulated for dogs and cats. Journal of the American Veterinary Medical Association 2015; 247:385-392.  
 ii. Kanakubo, K, Fascetti AJ, Larsen JA. Determination of mammalian deoxyribonucleic acid (DNA) in commercial vegetarian and vegan diets for dogs and cats. Animal Physiology and Animal Nutrition 2016; doi: 10.1111/jpn.12506.