THE ASSOCATION OF AMERICAN FEED CONTROL OFFICIALS
K-STATE OLATHE LED SCIENTIFIC PANEL FOR INGREDIENT APPROVAL
2024

OVERVIEW

The Association of American Feed Control Officials (AAFCO) is an independent, non-profit organization that has been guiding state, federal and international feed regulators with ingredient definitions, label standards and laboratory standards for more than 115 years, while supporting the health and safety of people and animals. AAFCO members are charged by their local, state, or federal laws to regulate the sale and distribution of animal feeds and animal drug remedies.

AAFCO's longstanding purpose has been to serve as a venue for feed regulators to explore the problems encountered in administering feed laws; to develop just and equitable standards, definitions, and policies for the enforcement of feed laws; and to promote uniformity in laws, regulations, and enforcement policies. AAFCO's trusted scientific leadership professionals have deep and varied expertise and collaborate on important industry issues.

AAFCO publishes the "Official Publication" annually in October and an online version that is updated twice a year that includes the Online Database of Ingredients (ODI). The AAFCO Official Publication is used to inform the industry of the following:

- Approved US animal feed and pet food ingredient definitions.
- Current pet food and animal feed labeling requirements.
- Model guidance documents and model bill and regulations that may be adopted by states as state laws.
- Committee members and industry advisers to AAFCO committees.

In the past, AAFCO has relied on FDA to provide the scientific review panel for animal feed ingredient definitions. This partnership is ending October 1, 2024 and AAFCO is pursuing new partnerships to provide the scientific review panels for ingredient submissions.

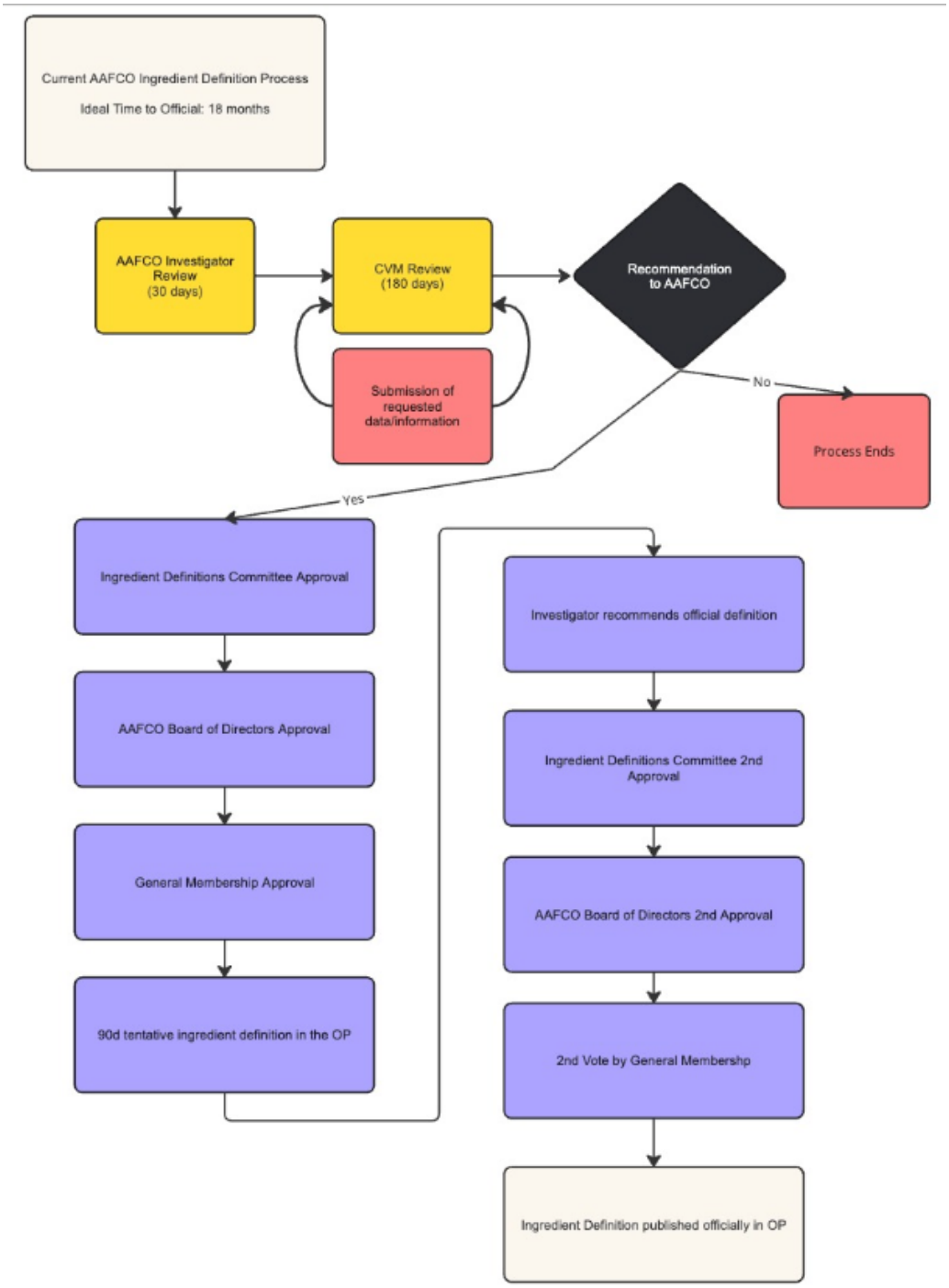
The scientific review panel is proposed to consist of 3 – 5 subject matter experts with expertise in ingredients, processing, and nutrition for species of interest for the proposed new ingredient definition. Experts asked to serve on the panel will be drawn from a larger pool based on their expertise and the ingredient definition petition proposed. The new process for ingredient approval would include:

- Submission of proposal to AAFCO
- Review of proposal by AAFCO investigators leading to either elimination of proposals if not applicable or prompting of further review by scientific review panel
- Proposal will then be submitted for review proposals by expert review panel
- Expert Review Panel provides feedback in 60 to 90 days (currently FDA is taking 180 days)
- Panel will provide report outlining their suggestion for AAFCO regarding the

proposed new ingredient definition

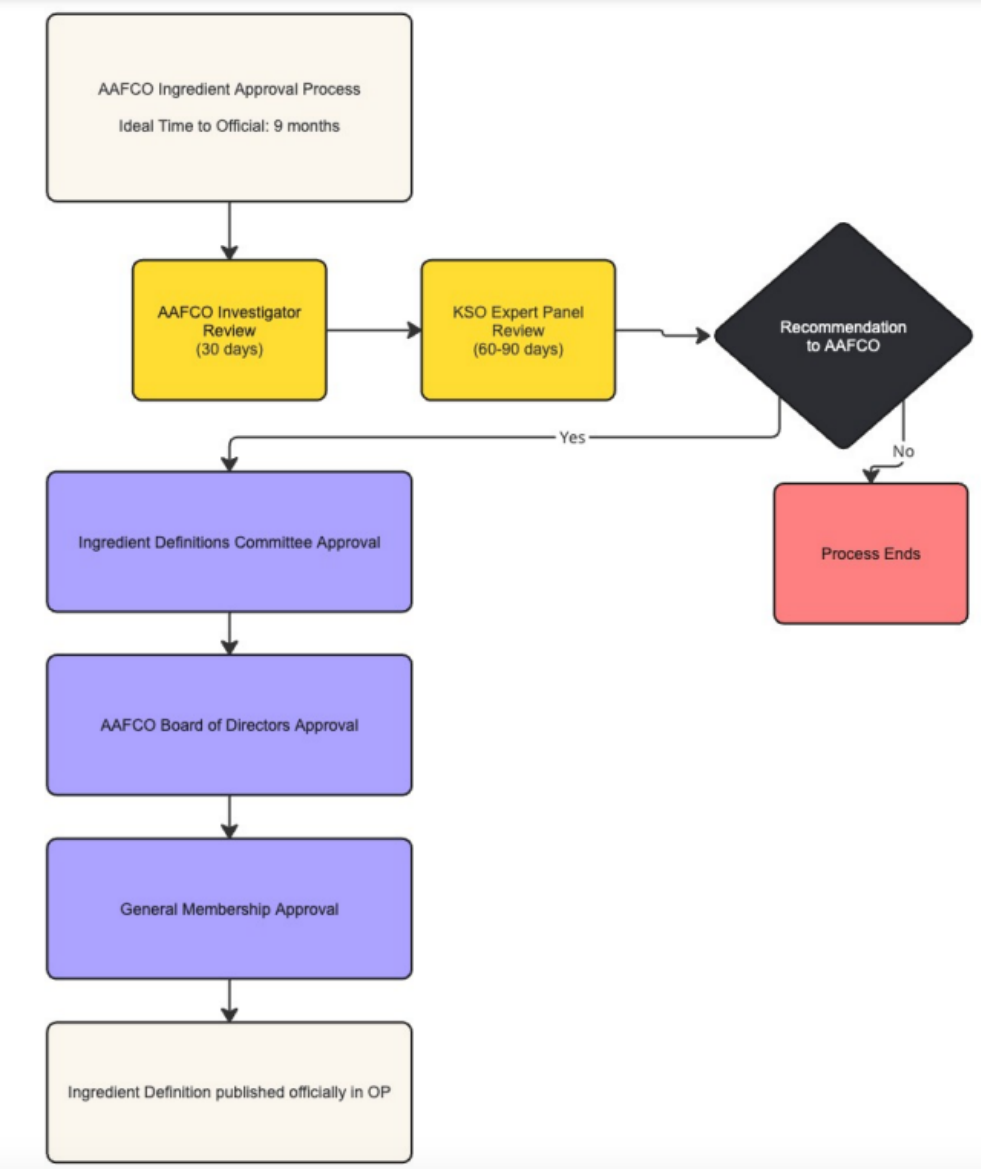
AAFCO has approached K-State Olathe to provide a proposal for the management of the expert review panel process.

<u>Below is the historical AAFCO/ FDA Process (18 months)</u>



The proposed project flow has the potential to remain similar to the current flow to ensure industry understanding of the requirements but will leverage industry experts nationwide and aims to increase go-to-market agility for new ingredient use in animal food/feed. AAFCO also proposes to eliminate the tentative portion of the ingredient process, thus eliminating six months from the process

Proposed project flow with KSO (9 months)



PROGRAM PROPOSAL

AAFCO and K-State Olathe (KSO) will establish a steering committee made up of representatives from state government and the animal food industry. This formal collaborative body will provide strategic direction and guidance to AAFCO and KSO regarding the creation of the regulatory pathway outlined within this document; they will also aid in the creation of the procedures to avoid actual or perceived conflicts of interest that may arise.

K-State Olathe will manage the process of soliciting subject matter experts (SME), contracting SMEs to serve on scientific review panels, managing panel reviews and providing final reports.

Scientific Lead

K-State Olathe is proposing that Haley Larson, Ph.D., will lead the AAFCO/KSO partnership and

oversee the entire scientific review process.

Haley Larson, Ph.D., is a teaching assistant professor of animal health at Kansas State University's Olathe campus. Larson earned her B.S. in Animal Science and Ph.D. in ruminant nutrition from the University of Minnesota. Her graduate studies focused on understanding how manipulation of growth and fermentation patterns in feedlot cattle effects animal performance. While completing her degree, Larson began working as a

senior scientist for Cargill Animal Nutrition and Health. During her time with Cargill, Larson worked to develop and deploy on farm technologies for dairy, beef, swine, poultry and aquaculture. She also worked to enhance the biological models behind the companies ration formulation system through evaluation of feed ingredients and additives. In her role at K-State Olathe, Larson teaches and advises graduate students in various programs related to animal health. She teaches several animal health graduate-level courses within the department of applied and interdisciplinary studies, department of animal sciences and industry, as well as the College of Veterinary Medicine's diagnostic medicine and pathobiology department. Her teaching interests involve topics such as regulatory affairs for animal health and nutrition, research strategies for product development, zoonotic pathogens in the food chain and the interconnections between animal nutrition and health. Her passion for educating the industry's next generation of agricultural professionals shines through in her courses, particularly those focused on interdisciplinary approaches in animal agriculture.

Management of Expert Review Panels

KSO will establish a process for selecting SMEs to serve on review panels. SMEs will be represented from various universities, outside consultants and other areas that provide diversity and representation of all species.

The tasks required for start-up and program development as well as the proposed process for scientific review are outlined below.

Start-Up and Program Development

- Establish a database of SME's
  - SME's will be recruited from K-State, universities in US, independent consultants, and other relevant experts.
  - A database will be developed to maintain the list of SMEs. KSO will use HubSpot, a system that is used for other communication and marketing to maintain the database.
- Process to apply to be an SME.
  - The Scientific Lead and Program Manager will develop a process for SMEs to apply to serve on expert panels.
  - The team will solicit applicants to represent diverse species and expertise to build a quality database of experts.
- Process to review applications and approve SME's
  - Develop process for determining eligibility of SMEs.
  - Tracking process for areas of expertise.
  - Track reported conflict of interests of SMEs.
  - Annual review of database and update SME list.

        - Renewal and dismissal process.
        - Continue to build database as needed.
    - Develop a process to select and hire SMEs when requests are determined to be eligible for scientific panel review.
      Work with AAFCO to establish required data and documentation from new ingredient definition request submissions.
    - Proposed Process for Scientific Review
    - KSO will manage the entire process for review including providing SMEs the materials, template for pre-evaluation notes/comments, communication with SMEs, schedule deliberation meeting, and other responsibilities as identified.
    - * Organize deliberation meeting with SME panelists with final vote. Manager will take minutes of meetings.
        - * AAFCO anticipates that each review will require some level of back and forth to answer questions the panelists may have. All questions should be addressed by the submitter or agent in as timely of a manner as possible to ensure the review time remains expeditious. However, if during the course of the review questions arise where additional data is needed, AAFCO and KSO will work to temporarily pause the review and allow the submitter to gather the data needed. Requests for additional time will be considered based on the complexity of the question and data needed.
        - AAFCO also acknowledges that there may be some cases where time is needed to conduct additional research to address questions or support a conclusion. AAFCO will work with submitters if this situation arises to avoid incurring a separate cost, however this may not always be feasible.
    - Develop draft report with panel review results and submit draft to panelists for review prior to final submission.
    - Make changes based on meeting and feedback from final draft review to finalize document.
    - Submit final recommendation report to AAFCO Ingredient Definitions Committee.

Program Administration

- A program manager hired by KSO will work directly with the AAFCO Investigators for the ingredient sections to evaluate the ingredient definition request submissions. An estimated 15+ ingredient definition request submissions are received annually. The manager will ensure that the data package contains all the necessary information for the scientific review panel. Having the manager involved early in the submission process will streamline and improve efficiency in organizing the scientific review panel species and ingredient SMEs.

STAFFING AND BUDGET FORECAST

Scientific Lead: Dr. Haley Larson, teaching assistant professor and expert in animal nutrition will be the scientific expert to lead the program.

Program Manager: KSO will develop a new position to manage the program and ensure the review process is completed within the agreed timeframe. The program manager will be the main contact person for AAFCO. The position will require knowledge of animal nutrition and ability to work with SMEs and will prefer someone with at least a master's

degree. The position description will be developed and advertised after the agreement with AAFCO is final with the goal to have the new hire on board by March of 2025.
Administration and Support: Administrative support, marketing and communications, and IT support will be provided by the KSO team.

ROLES AND RESPONSIBILITIES

Communication between AAFCO and KSO will be critical to the success of the partnership.

Specific roles and responsibilities will be developed once proposal is approved.

TIMELINE

September 2024	Negotiations and discussion on finalizing proposal
November 2024	AAFCO BOD acceptance of proposal
December 2024	K-State General Counsel review and approve
January 2025	AAFCO Membership vote/Announce partnership
February 2025	Staff hired (est. start day March 1, 2025)
May 1, 2025	Process for Start-up completed

Timeline will be adjusted as needed based on status of partnership with AAFCO and the approval process.

PROGRAM TEAM

Haley Larson, Ph.D. Teaching Assistant Professor of Animal Health

Larson earned her B.S. in Animal Science and Ph.D. in ruminant nutrition from the University of Minnesota. Her graduate studies focused on understanding how manipulation of growth and fermentation patterns in feedlot cattle effects animal performance. While completing her degree, Larson began working as a senior scientist for Cargill Animal Nutrition and Health. In that role, she designed and developed the company's dual-flow continuous culture system – the first fully automated dual-flow system for cattle rumen simulation. This system, and the data she generated, is still being used for new product development and fermentation modeling within the company today. During her time with Cargill, Larson was also presented with many opportunities to develop and deploy on farm technologies for dairy, beef, swine, poultry and aquaculture.

Larson teaches and advises graduate students in various programs related to animal health. She teaches several animal health graduate-level courses within the department of applied and interdisciplinary studies, department of Animal Sciences and Industry, as well as the College of Veterinary Medicine's diagnostic medicine and pathobiology department. Her teaching interests involve topics such as regulatory affairs for animal health and nutrition, research strategies for product development, zoonotic pathogens in the food chain and the interconnections between animal nutrition and health. Her passion for educating the industry's next generation of agricultural professionals shines

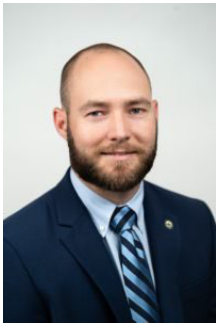
through in her courses, particularly those focused on interdisciplinary approaches in animal agriculture. In her role at K-State Olathe, Larson designs academic courses and professional development programming tailored to Greater Kansas City's growing animal health industry.

Debbie Kirchhoff, Executive Director of Strategic Initiatives

Debbie Kirchhoff is responsible for community engagement and outreach in the Greater Kansas City region; and identifying and implementing opportunities for new initiatives that align with the strengths of Kansas State University. These efforts also position K- State Olathe as a springboard for growth opportunities for Kansas State University.

Kirchhoff brings more than 25 years of corporate relations, community engagement and leadership experience in the Greater Kansas City region. She joined the Kansas State University Foundation as the director of corporate and foundation relations for K-State Olathe from 2011-2014 and director of development for the university's College of Veterinary Medicine from 2014-2016.

Kirchhoff earned her undergraduate degree in business from Kansas State University and her Master of Business Administration from Mid-America Nazarene University. She has volunteered in the community for numerous organizations. She has lived in Johnson County, Kansas, most of her life. Kirchhoff currently lives in Olathe, Kan., with her husband and has two grown children.



Austin Therrell, Executive Director, AAFCO

Austin currently serves as the Executive Director for the Association of American Feed Control Officials (AAFCO). Prior to his current role with AAFCO, he served on the Board of Directors and as the Co-Chair of the AAFCO Feed & Feed Ingredient Manufacturing Committee, as a member of the AAFCO Pet Food Committee, and as a member of the Current Issues and Outreach Committee. Austin previously served as the Animal Feed Program Manager for the South Carolina Department of Agriculture where he oversaw animal food inspection priorities across the state product registrations, labeling compliance, and a statewide sampling program. He graduated from Clemson University in 2013 with a Bachelor of Science degree in Animal and Veterinary Science and a minor in business administration.

PARTNERSHIP

The partnership between K-State Olathe and AAFCO will be mutually beneficial. A publicity plan to showcase the partnership will be developed and approved by both parties. AAFCO will help promote relevant educational and research programs to its members and K-State Olathe will highlight AAFCO in communications to students, faculty and other partners. A full partnership agreement will be included in the final MOU.

APPROVALS

Kansas State University general counsel will review and approve. MOU will be developed, and all parties will sign.

PRICING STRUCTURE

SUBMISSION TIER	AMOUNT
Basic Scientific Review - Needed for modification[1] of an AAFCO definition that requires a scientific review from a SME.	$10,000
Full Submission Package - Includes data to support approval for 1-2 species of animals - * Includes review by a minimum of 2 SME's.	$25,000
Expanded Submission Package - Includes data to support approval for 3+ species of animals - * Includes review by a minimum of 3 SME's.	$35,000

[1] Modification, when used within this process, means any type of change to an AAFCO definition that is scientific in nature and needs to be supported by appropriate data to substantiate the change. This change may result in altering the composition of an ingredient that is publicly available in the market.

* Extra SME's may incur an additional $5000 cost per SME and may require an additional 10-15 days of review time.

DATA REQUIREMENTS

The following guide is offered to assist in development of new or modified feed ingredient definitions within the AAFCO Approval Process (AAP). The roles of each party are described below. The definitions should be non-proprietary as not to favor one ingredient producer over another. Materials to be used as feed ingredients should have the following attributes:

They should be consistent batch to batch. The material should not be a combination of other ingredients. The intended use should not be to mitigate, treat, or diagnose a disease **(other than prevent a nutritional deficiency)**, but rather to provide nutrition, flavor, aroma for the animal or provide a technical effect in the feed. It is the manufacturer's responsibility to produce a safe ingredient for its intended purpose.

The Submitter

Prior to submitting a request for a new or modified definition, the submitter should consider the current ingredient definitions and develop a draft definition that includes the intended use. The submitter should then contact the appropriate AAFCO investigator (see the AAFCO *Official Publication* or website for current listing) by email to definitions@aafco.org to discuss the draft definition. Following the initial discussion, a submitter should then submit a data packet to the investigator in writing that contains the information described below, if pertinent, so there is sufficient information to present before an expert panel.

Part One – Signed Statements & Certification

1. Inform us that you are submitting a GRAS notice in accordance with 21 CFR 570 Subpart E.
2. Name and address of your organization
3. Provide the name of the substance, using an appropriately descriptive term;
4. Describe the intended conditions of use of the substance, including stating whether the substance will be added to food (including drinking water) for animals in which the substance will be used; identifying the foods to which it will be added, the levels of use in such foods, and the animal species for which these foods are intended (including, when appropriate, a description of a subpopulation expected to consume the notified substance); and the purposes for which the substance will be used;
5. State your view that the substance is not subject to the premarket approval requirements of the Federal Food, Drug, and Cosmetic Act based on your conclusion that the notified substance is Generally Recognized as Safe under the conditions of its intended use pursuant to scientific procedures in accordance with 21 CFR 570.30(a)(1);
6. State your view that the notified substance is not subject to the premarket approval requirements of the Federal Food, Drug, and Cosmetic Act based on your conclusion that the notified substance is GRAS under the conditions of its intended use;
7. State that, if we ask to see the data and information that are the basis for your conclusion of GRAS status, either during or after our evaluation of your notice, you will:
    a. Agree to make the data and information available to us; and
    b. Agree to both of the following procedures for making the data and information available to us:
        i. Upon our request, you will allow us to review and copy the data and information during customary business hours at the address you specify for where these data and information will be available to us; and
        ii. Upon our request, you will provide us with a complete copy of the data and information either in an electronic format that is accessible for our evaluation or on paper;
8. Certify that, to the best of your knowledge, the AAP submission is a complete, representative, and balanced submission that includes unfavorable information, as well as favorable information, known to you and pertinent to the evaluation of the use of the substance.
9. State the name, title, and contact information for the person who is responsible for submitting the AAFCO AAP Submission. It must be signed by a responsible official of your

organization, or by your attorney or agent.

Part Two – Identity, method of manufacture, specifications, and physical or technical effect.

You must include:

1. Scientific data and information that identifies the substance.
    a. Examples of appropriate data and information include the chemical name, applicable registry numbers (such as a Chemical Abstracts Service (CAS) registry number or an Enzyme Commission (EC) number), empirical formula, structural formula, quantitative composition, and characteristic properties.
    b. When the source of a notified substance is a biological material, you must include data and information sufficient to identify:
        i. The taxonomic source (*e.g.,* genus, species), including as applicable data and information at the sub-species level (*e.g.,* variety, strain);
        ii. The part of any plant or animal used as the source; and
        iii. Any known toxicants that could be in the source;
2. A description of the method of manufacture of the substance in sufficient detail to evaluate the safety of the substance as manufactured;
3. Specifications for material that is of appropriate grade for use in animal food;
4. Summary of data to support stability of ingredient;
5. Validation information of analytical methods to support testing and/or citation of official methods; and
6. When necessary to demonstrate safety, generally recognized and relevant data and information bearing on the physical or other technical effect the substance is intended to produce, including the quantity of the substance required to produce such effect.

Part Three – Target animal & human exposures.

In part 3 of your AAP submission, you must provide data and information about exposure to the target animal and, if applicable, to humans consuming human food derived from food-producing animals.

1. Target Animal Safety Studies

For exposure to the target animal, you must provide:

a. The amount of the substance that different target animal species are likely to consume in the animal food (including drinking water) as part of the animal's total diet, including the intended use and all other sources in the total diet; and
b. When applicable, the amount of any other substance that is expected to be formed in or on food because of the use of the notified substance (*e.g.,* hydrolytic products or reaction products);
c. When applicable, the amount of any other substance that is present with the notified substance either naturally or due to its manufacture (*e.g.,* contaminants or by-products);
d. The data and information you rely on to establish the amount of the substance and the amounts of any other substance in accordance with paragraphs a-c of this section that different target animal species are likely to consume in the animal food (including drinking water) as part of the animal's total diet.

Additional considerations for target animal studies:

Target animal studies are generally conducted to address the safety of a food substance under its intended conditions in the target animal. Target animal studies should be conducted using the life stage and animal species for which the substance will be marketed. The number of animals used in a study to evaluate the safety of a substance should be based on the expected variation in the parameters that will be measured.

Target animal safety studies should also demonstrate the margin of safety for the intended use of the substance. When designing safety studies in target animals, at least three inclusion levels (treatments) of the substance should be used. A concurrent control group of test animals should be included in the study. The study design should include at least four experimental groups: (1) a negative control, (2) the maximum proposed use level, and (3-4) two multiples of this level for a period of time in excess of the recommended maximum duration of use. Examples of parameters for evaluation of safety in each group can include: clinical observations (e.g., of behavior, appearance, and eating patterns), blood analyses, mortality, weight gain, feed intake, and necropsy findings (gross and histopathologic abnormalities).

2. Human Food Safety Studies

When the intended use is in food for food-producing animals, you must provide:

a. The potential quantities of any residues that humans may be exposed to in edible animal tissues, including:
    i. Residues of the substance;
    ii. Residues of any other substance that is expected to be formed in or on the animal food because of the use of the substance; and
    iii. Residues from any other substance that is present with the substance whether naturally, due to its manufacture (*e.g.,* contaminants or by-products), or produced as a metabolite in edible animal tissues when the substance is consumed by a food-producing animal; and
b. The data and information you rely on to establish, in accordance with paragraph a. of this section, the potential quantities of any residues that humans may be exposed to in edible animal tissues.

Additional considerations for human food safety studies:

If the substance will be used in animals providing food for human consumption a sponsor should provide scientific data demonstrating that the residues of the substance are safe to humans consuming edible products of animals fed the substance.

Testing should include an assessment of systemic toxicity, reproduction toxicity, developmental toxicity, genotoxicity, carcinogenicity, and effects on the human intestinal flora.

3. <u>Toxicology</u>:

A standard array of tests may be used to determine the potential toxicity to human consumers associated with the use of a substance. Each test is designed to examine a different toxicological endpoint. Residue chemistry studies are used to determine the amount of the substance that could be produced in or added to human food products after

an animal has consumed the substance. FDA addresses relevant residue chemistry tests in detail in FDA's Guidance for Industry #3 *General Principles for Evaluating the Safety of Compounds Used in Food-producing.*

4. *Animals Microbial Food Safety*:

If the substance possesses measurable antimicrobial activity, an ingredient sponsor will need to submit sufficient data to determine whether the substance has any adverse impact on the development of antimicrobial resistance among food-borne pathogens and bacteria in the intestinal tract of animals consuming the substance. In addition, the impact on human intestinal flora should be assessed for such substances to determine whether a microbiological acceptable daily intake ("ADI") should be established for the substance.

Part Four – Self-limiting levels of use

In circumstances where the amount of the substance that can be added to animal food is limited because animal food containing levels of the substance above a particular level would become unpalatable or technologically impractical, in Part Four of your AAP submission you must include data and information on such self-limiting levels of use.

Part Five – Narrative

In Part Five of your AAP submission, you must include a narrative that provides the basis for your conclusion of safety, in which:

1.
    a. You must explain why the data and information in your submission provide a basis for your view that the substance is safe under the conditions of its intended use for both the target animal and, if appliable, for humans consuming human food derived from food-producing animals. In your explanation, you must address the safety of the substance, considering all animal food (including drinking water) as part of the animal's total diet, taking into account any chemically or pharmacologically related substances in such diet. In your explanation, you must also address the safety of the substance in regard to human exposure, considering all dietary sources and taking into account any chemically or pharmacologically related substances;
    b. In your explanation, you must identify what specific data and information that you discuss in accordance with paragraph a of this section are generally available, and what specific data and information that you discuss in accordance with paragraph a of this section are not generally available, by providing citations to the list of data and information that you include in Part Six of your submission.

2. You must explain how the generally available data and information that you rely on to establish safety in accordance with paragraph 1 of this section provide a basis for your conclusion that the substance is generally recognized, among qualified experts, to be safe under the conditions of its intended use for both the target animal and, if applicable, for humans consuming human food derived from food-producing animals;
3. You must either:
    a. Identify, discuss, and place in context, data and information that are, or may appear to be, inconsistent with your conclusion of safety, regardless of whether those data and information are generally available; or

b. State that you have reviewed the available data and information and are not aware of any data and information that are, or may appear to be, inconsistent with your conclusion of safety;

4. For non-public, safety-related data and information considered in reaching a conclusion of safety, you must explain how there could be a basis for a general conclusion of safety if qualified experts do not have access to such data and information.

Part Six – List of supporting data and information in your AAP submission

1. In Part Six of your AAP submission, you must include a list of all of the data and information that you discuss in Part Five of your submission to provide a basis for your view that the substance is safe under the conditions of its intended use as described in Part Five (a)(1);
2. You must specify which data and information that you list in accordance with paragraph 1 of this section are generally available, and which data and information are not generally available.

It is imperative that the submitter provide all information that is available to support their conclusion.