One Sample Strategy

The Office of the Texas State Chemist authored a White Paper titled “Aflatoxin Risk Management in Texas, Pursuit of a One Sample Strategy” to discuss with the OTSC Advisory Committee and other interested stakeholders.

Aflatoxin is a biological toxin produced by fungi and is a group one carcinogen. Research in the United States (US) led to the 1969 establishment of an action level at 20 ppb, above which, product is consider unsafe for animal and human consumption. Further guidance for safe levels of consumption was established by the Food and Drug Administration in 1989 and 1994 that are presented in Compliance Policy Guide 683.100 as follows:

- 300 ppb for corn and peanut products intended for finishing (i.e., feedlot) beef cattle;
- 300 ppb for cottonseed meal intended for beef cattle, swine, or poultry (regardless of age or breeding status);
- 200 ppb for corn or peanut products intended for finishing swine of 100 pounds or greater;
- 100 ppb for corn and peanut products intended for breeding beef cattle, breeding swine, or mature poultry;
- 20 ppb for corn, peanut products, and other animal feeds and feed ingredients, but excluding cottonseed meal, intended for immature animals;
- 20 ppb for corn, peanut products, cottonseed meal, and other animal feeds and feed ingredients intended for dairy animals, for animal species or uses not specified above, or when the intended use is not known.

At the request of stakeholders during the January 11, 2010 meeting in College Station, TX, the director of OTSC began to explore the concept of using a single sample for managing aflatoxin risk at the first commercial collection point (e.g. grain elevators). Presently, many commercial grain operations test incoming grain for aflatoxin. Samples are collected by grain elevators and picked up by crop insurance adjusters to assess toxin level for quality adjustments, and OTSC field investigators collect official regulatory samples to monitor the incidence of aflatoxin entering commerce.

Because aflatoxin is measured in part per billion (ppb), there exists a high probability that the above mentioned three samples will yield different results when measured for aflatoxin.

To protect consumers and facilitate commerce, the Office of the Texas State Chemist proposes adoption of a risk management strategy that includes monitoring aflatoxin in corn using a single sample.

During the 2010 harvest, OTSC field investigators benchmarked grain elevator sampling and aflatoxin testing procedures against OTSC best management practices (BMPs) and the US Department of Agriculture’s Risk Management Agency’s procedures contained in the Loss Adjustment Manual (LAM). Grain elevator operators and feed manufacturers were requested to run control samples containing known levels of aflatoxin to assess testing proficiency. The results of this effort were reported at the OTSC Advisory Committee during the November 4, 2010 annual meeting in Amarillo, TX and will be used to formulate an approach to implementing the One Sample Strategy.
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Among the discoveries during the aflatoxin sampling and analysis assessment was a need to validate aflatoxin test kits’ performance at high levels of aflatoxin incidence (greater than 300 ppb). The OTSC Best Management Practices to Prevent or Reduce Mycotoxin Contamination in Texas include a recommendation to “Use GIPSA verified test kits or AOACI official methods when analyzing mycotoxin.” The quantitative test kits approved by the Federal Grain Inspection Service (FGIS) of the Grain Inspection, Packers and Stockyard Administration (GIPSA) have been validated for measuring aflatoxin levels up to 100 ppb. OTSC will validate test kits’ capability to test aflatoxin levels up to 500 ppb in December, 2010.

Firms that choose to participate in the voluntary “One Sample” program will use validated aflatoxin test kits and follow a prescribed sampling pattern, sample size, and amount of material ground tested for aflatoxin, demonstrate performance to analyze aflatoxin using OTSC check samples, use control samples, and follow record keeping procedures. It is the intention of the Service to accept commercial grain elevator results for those firms choosing to participate in voluntary “One Sample” program.

FAO Animal Nutrition Lab QC

A presentation delivered by Dr. Tim Herrman on the status of the Kenyan feed industry during the International Feed Industry Federation (IFIF) meeting conducted at the Food and Agricultural Organization (FAO) headquarters reaffirmed FAO thinking that there is an urgent need to put in place a quality control system in developing country laboratories. The FAO animal nutrition specialist Dr. Harinder Makker has visited animal nutrition laboratories in over 40 developing countries and has observed that few have quality control mechanisms in place. Absence of a quality control program results in laboratory data that is not reliable, leading to uncertainty among decision makers including animal nutritionists and feed manufacturers.

The Office of the Texas State Chemist has been requested to develop a draft Animal Nutrition Lab QC manual. Per FAO communication, “Yours is a big lab and conducts analyses on a large range and types of sample.” FAO wants to focus on enhancing quality of the data coming out from animal nutrition laboratories in developing countries and believes that OTSC has a big role to play in facilitating this process. FAO stated that “It would be an excellent contribution to the scientific community and will benefit both researchers and the feed industry in developing countries.”

The Quality Control system will focus on Animal Nutrition Laboratories performing proximate analysis of feeds including crude protein, fat (ether extract), fiber analysis (NDF, ADF, lignin), ash, dry matter, some important minerals, milk composition analysis, and other animal nutrition related analyses. The aim is to improve precision, accuracy, traceability, representativeness, completeness and comparability of the data.

The program should take the user (technician) through a step-by-step process from recording of samples in the lab, analysis, critical steps and precautions to be taken, internal standards, how to ensure data reliability, preparation of quality control charts for each method, how much deviation in the values obtained for a sample to be acceptable, and printing of the results. The introduction to the quality control manual will begin with a section on Good Animal Nutrition Laboratory practices including calibration of pipettes, balances and pH meters, disposal and hazard issues, how to prepare and keep distilled water, and how to properly clean and dry glassware.

The OTSC Quality Assurance Manager, Dr. Jim Balthrop will provide leadership to this endeavor. This activity aligns with the OTSC vision stating that “Trading partners, industry and feed control officials will adopt a science-based approach to risk management patterned after OTSC.”
Salmonella Summary

Salmonella test results for the 2008-2010 fiscal years were analyzed to provide information on Salmonella distribution in animal feeds with respect to inspection area, product class, sampling date, and fiscal year.

According to data analysis results, 202 (13.2%) out of 1,528 feed samples were Salmonella positive and such Salmonella positive samples were manufactured from 87 out of 433 feed firms. The highest percent of the Salmonella positive samples were present in animal product proteins (46.3%), rice products (22%), and cottonseed products (20.4%). Particularly, Salmonella positive samples from animal product proteins consist of a major portion (36.6 %) of total Salmonella positive samples. There were no seasonal differences in percent Salmonella positive samples. The total numbers of Salmonella positive samples in FY 2010 were n=98, FY 2009 n=58 and in FY 2008 n=46.

All Salmonella positive samples were further enriched and plated to obtain typical Salmonella isolates for biochemical identification, serotyping, and pulsed field gel electrophoresis (PFGE) analysis. OTSC is a PulseNet participant and agency personnel uploaded the results of serotyping and PFGE band pattern analysis to the National PulseNet database. In FY 2008, 28 serotypes and 56 isolates of Salmonella were detected in 46 feed samples out of 523 samples tested. In FY 2009, the number of Salmonella serotypes was identical to that in FY 2008, but 9 more isolates were found in 58 feed samples out of 507 samples tested. In FY 2010, the number of serotypes and isolates significantly increased although the similar number of samples (total 502 samples including 382 regular feed samples and 120 vegetable waste-stream) were tested for Salmonella. Out of 502 samples, 35 serotypes and 113 isolates of Salmonella were detected in 98 samples which were all from regular feed samples. During the fiscal years of 2007 through 2010, Salmonella serotypes were isolated from 220 feed samples out of 2,045 samples tested. Of 64 serotypes and 253 isolates detected in animal feeds during this period, the five most prevalent Salmonella serotypes (isolates) were Mbandaka (31), Montevideo (23), Senftenberg (18), Infantis (15), and Livingstone (14).

OTSC Regulatory Update

Fiscal Year (FY) 2010 ended August 31, 2010. The data compiled for the annual report indicates OTSC collected a combined total of 6,904 samples of feed and fertilizer in FY 2010. 3,948 samples of feed were analyzed with total chemical violations in 1,078 of those samples (27%). 1,781 samples of fertilizer were analyzed with total chemical violations in 357 of those samples (20%).

The FY 2011 annual plan of work includes routine monitoring of feed, fertilizer and feed and fertilizer ingredients for economic conformance to the label, as well as surveillance for adulterants (toxins, microbial contaminants, dioxins, heavy metals and antibiotic residues).

The OTSC is partnering with the Texas Department of State Health Services (DSHS) in a Food and Drug Administration (FDA) funded grant for a Rapid Response Team (RRT). Texas is one of nine States that received the RRT grant. The scope of the RRT is to provide preparedness, prevention, and an immediate response to a food-related disaster that would affect the citizens of Texas. This would include a large scale investigation involving food and/or feed and large scale recalls of food and/
Protects consumers & enhances Agri-Business through its Feed & Fertilizer Regulatory Compliance Program, surveillance & monitoring of Animal-Human health & environmental hazards, & preparedness planning.

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or feed. It is not intended to include a natural disaster (hurricane, forest fire, etc.), however, there are outcomes from a natural disaster that are within the scope of the RRT, such as flooding, wind storms, tornadoes, power outages and fires, and then only if the food chain would be threatened and are not part of a statewide emergency response activation.

OTSC Fall Advisory Committee Meeting

The OTSC Fall Advisory Committee was hosted for its Fall Meeting by its Chair, Ben Weinheimer, at the headquarters of the Texas Cattle Feeders Association in Amarillo, Texas. In attendance were 20 members and guests, topics included endemic anthrax in native deer, OTSC performance measures, fertilizer policy applicable to manure, mycotoxins, OTSC budget, and building updates.

Action items will require continued discussions within a subcommittee-working group and dialog with several key state agencies and possibly FDA. The use of “Stop-Sales” to gain compliance was discussed. And finally, resolution of mycotoxin issues need to move to the next level with proficiency in testing and sampling, as well as test kit validation, control samples, and procedure standardization were needed, along with education of the producers and marketers. A working subcommittee was identified that will continue to work on details involving the one sample strategy.

The meeting in Amarillo was followed by a tour of an ethanol production facility and a feedlot utilizing both the dried and wet distillers grains for feed. The meeting also coincided with the Panhandle Grain Association meeting that evening, in which a number of advisory committee and OTSC personnel were in attendance.

AAPFCO Fertilizer Administrators Seminar

Roger Hoestenbach attended the AAPFCO Administrators Seminar in October as both a presenter and participant. In addition to general administrator training, the program included special discussions regarding the Compost Model Bill, a possible need to convert several AAPFCO official “Terms” to official product “definitions”, issues with current Investigational Allowances, issues of misbranding, ammonium nitrate distribution enforcement and compliance, fertilizer applicator certification procedures, and policies and definitions regarding enhanced efficiency fertilizer materials. Many of these issues are the result of continued increases in technology, challenges to the environment, and our ability to respond for the betterment of all concerned, consumers and manufacturers alike. All in all, a very informative program was presented that was helpful for everyone in attendance.