Regulatory Issues Related to DDGS
State of TX Viewpoint

Dr. Susie Dai
Office of the Texas State Chemist
Department of Veterinary Pathobiology
Texas A&M University
May 14th 2014
OFFICE OF THE TEXAS STATE CHEMIST

Protecting consumers and enhancing agribusiness through its feed and fertilizer regulatory compliance program, surveillance and monitoring of animal-human health and environmental hazards, and preparedness planning.

Office of the Texas State Chemist

FDA Recall Notices & Alerts

<table>
<thead>
<tr>
<th>Date</th>
<th>Product Type</th>
<th>Short Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 16, 2014</td>
<td>Feed</td>
<td>Purina Animal Nutrition LLC Recalls Poultry Feeds Due to Potential Health Risk ...more</td>
</tr>
<tr>
<td>Feb 05, 2014</td>
<td>Pet Food</td>
<td>Pro-Pet LLC Recalls a Limited Number of Dry Dog and Cat Foods Due to Possible Salmonella Contamination ...more</td>
</tr>
<tr>
<td>Jan 25, 2014</td>
<td>Pet Food</td>
<td>PMI Nutrition, LLC Recalls Red Flannel® Cat Food Due to Possible Salmonella Contamination ...more</td>
</tr>
<tr>
<td>Nov 27, 2013</td>
<td>Feed</td>
<td>Cargill Conducts Voluntary Recall of Select Nutrena® NatureWise® Meshtop and Chick Starter Feed ...more</td>
</tr>
</tbody>
</table>

What's new

- Now Hiring-Feed & Fertilizer Inspector
- Ammonium Nitrate
- Feb 2014 OTSC Newsletter
- Regulatory Science in Food Systems Graduate Certificate
- Feed Industry HACCP Website
- One Sample Strategy Website
- Testing on Private Samples (3-17-14)
Outline

- Who are we
- Plan of Work at OTSC
- DDGS Analysis
- Industry
Where do We Receive the Authority

- Texas Commercial Feed Control Act
- Texas Agricultural Code Chapter 141
- Agricultural Analytical Service
  - Three teams
- Feed and Fertilizer Control Service
  - Field investigators
  - Registration
  - Compliance
Structure

Feed and Fertilizer Control Service  Agricultural Analytical Service

Element Team
CMS Team
Microbiological Team
Laboratory Analysis

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

Office of the Texas State Chemist
445 Agronomy Road, College Station, TX 77843

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2005

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (as outlined by the joint ISO-ILAC-IAF Communiqué dated January 2009):

Chemical Testing – Animal feed (in corn and corn products)  
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.
How do We Protect Customers?

- **Truth in Labeling**
  - Type of Product and how it is to be used.
  - Guaranteed Nutritional Qualities
  - Listing of Ingredients (Components that make up the product)
  - Proper Weight as guaranteed.
Cattle Feed Label

Horse Feed Label

Small Animal Label

CAPITOL SUPREME HORSE & MULE FEED

For maintenance of horses 18 months of age and over

GUARANTEED ANALYSIS

Nutritional Analysis

INGREDIENTS:
- Grain products
- Poultry by-products
- Fish meal
- Salt
- Fish oil
- Choline chloride
- Calcium carbonate
- Magnesium oxide
- Zinc oxide
- Manganese oxide
- Copper sulfate
- Vitamin A supplement
- Vitamin D3 supplement
- Vitamin E supplement
- Riboflavin
- Niacin
- Thiamin
- Pyridoxine
- Biotin
- Levothyrine
- Iodine
- Folic acid
- Vitamin B12 supplement
- D-biotin
- Calcium pantothenate
- Inositol
- Methylcobalamin
- Ascorbic acid
- Selenium

FEEDING DIRECTIONS:
Feed 2.5 lbs per day for desired weight or gain. Always provide plenty of fresh water and good quality hay or pasture.

Manufactured By
MUESTER MILLING CO., INC.
Muenster, TX 76252
Net Weight 50 lbs
Item No. 306 (05307)
Sample Chain of Custody

Office of the Texas State Chemist, Texas Agricultural Experiment Station, Texas A&M University System

Reports Mailed to Manufacturer
Analytical Results to FFCS
Sample Prepared for Analysis
Sample Information Stored

Texas Commercial Feed Control Act
Texas Agriculture Code Chapter 141
Each analytical result must be surrounded by sample integrity. Without proof of the sample chain of custody, an analytical result is just a number.

Official Sample
Official Feed Seal Placed on Sample
Information Entered
Sample Shipped
Sample Received
Outline

- Who are we
- Plan of Work at OTSC: Risk based
- DDGS Analysis
- Industry
Texas State Chemist Method

- Sample Driven approach
  - Targets coverage of all establishments in TX
  - Directs inspections based on violation history

- Risk Based approach
  - Probability of contamination
  - Sampling plan
Application of multivariate statistics in a risk-based approach to regulatory compliance

K.M. Lee, T.J. Herrman*, B. Jones

Office of the Texas State Chemist, Texas Agricultural Experiment Station, Texas A&M System, College Station, TX 77841, USA

Received 1 October 2007; received in revised form 18 January 2008; accepted 25 January 2008

Abstract

The application of risk analysis as a method to ensure food safety presents significant challenges to the regulatory community, including developing sampling and regulatory scheme based on historical data that focuses attention on firms with poor compliance records. This study examines the application of multivariate statistical analysis including principle component analysis, cluster analysis, and discriminant analysis to characterize Texas feed and fertilizer firms’ ability to manufacture nutritionally uniform products. Multivariate statistical results from a three year continuous data set and three variables were used to develop a sampling plan in which the best performing feed and fertilizer manufacturers were sampled at the lowest sampling percentage of the facilities. Sampling was optimized within each group to achieve the target number of total samples for the 2007 plan of work for the Office of the Texas State Chemist.

© 2008 Published by Elsevier Ltd
Three Variables for Compliance Analysis

- Guarantee deviation: Difference between the label guarantee and OTSC analytical results
- Non-violation rate: “Good” samples out of total samples
- Relative percent rank: Cross comparison of the single firm to all listed firms based on guarantee deviation
Outline

- Who are we
- Plan of Work at OTSC: Risk based
- DDGS Analysis
- TX Industry
DDGS Analysis

- Protein
- Element: Sulfur
- Antibiotics: Virginiamycin
- Microbiological: Salmonenlla
- Mycotoxin: aflatoxin and Fumonisin
- Prohibited protein: BSE
Protein Guarantee

Protein Guarantee Analysis

\[ y = 1.102x \]
\[ R^2 = 0.9212 \]
Sulfur

DDGS Sulfur content (%)

Sulfur Content (%) vs. Samples

Samples

-0.1
0
0.1
0.3
0.5
0.7
0.9
1.1
1.3
1.5

0
50
100
150
200
250

16
S
32.06

Are You Feeding me Poison??

OFFICE OF THE TEXAS STATE CHEMIST
## Other Contaminations

<table>
<thead>
<tr>
<th>Analytes</th>
<th>Sample Numbers</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virginiamycin</td>
<td>242</td>
<td>26 detected but less than 0.25 ppm</td>
</tr>
<tr>
<td>Salmonella</td>
<td>158</td>
<td>4 positives</td>
</tr>
<tr>
<td>Aflatoxin</td>
<td>156</td>
<td>7 &gt; 20 ppb</td>
</tr>
<tr>
<td>Fumonisin</td>
<td>35</td>
<td>1 = 5 ppm</td>
</tr>
<tr>
<td>BSE</td>
<td>167</td>
<td>1 sample shows Bovine DNA</td>
</tr>
</tbody>
</table>
Sampling Approach OTSC is taking

- Binomial Distribution: Contamination: Yes or No; Detected or Non detected

- Probability based approach: Use of contamination rate (probability of contamination) to determine how many samples we need to collect to find that contamination.

- The probability of contamination in DDGS is low based on our historical analysis results.
Conclusions

- Majority of DDGs samples are free of contaminations and conform to regulatory requirements.
Outline

- **Who are we**
- **Plan of Work at OTSC**
- **DDGS Analysis**
- **Industry**
## TX Agriculture and Livestock

### Major Agriculture & Livestock Production in Texas (2011)

<table>
<thead>
<tr>
<th>Product</th>
<th>Value of Production</th>
<th>Primary Location(s)</th>
<th>State Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle &amp; Calves</td>
<td>$11.2 billion</td>
<td>High Plains, North, Central</td>
<td>No. 1</td>
</tr>
<tr>
<td>Cotton</td>
<td>$2.3 billion</td>
<td>High Plains, Gulf Coast, Rio Grande Valley</td>
<td>No. 1</td>
</tr>
<tr>
<td>Poultry &amp; Eggs</td>
<td>$2.2 billion</td>
<td>Northeast, East, Central</td>
<td>No. 6</td>
</tr>
<tr>
<td>Wheat</td>
<td>$428 million</td>
<td>High Plains</td>
<td>No. 12</td>
</tr>
<tr>
<td>Milk &amp; dairy products</td>
<td>$2.0 billion</td>
<td>High Plains, Northeast, Central</td>
<td>No. 6</td>
</tr>
<tr>
<td>Sorghum</td>
<td>$344 million</td>
<td>High Plains, Gulf Coast, Rio Grande Valley</td>
<td>No. 2</td>
</tr>
</tbody>
</table>

[www.governor.state.tx](http://www.governor.state.tx)
Regional Concentrations

The map at right identifies the Texas counties with the highest agricultural output per square mile, including both crop and livestock production. Crop and livestock activities take place across the state, but the highest concentration of production is located in the panhandle. Agricultural concentrations also exist in the Rio Grande Valley, the Gulf Coast, Central Texas, and East Texas.
Recent Industry Trends

- TX leads the country in the production of cattle, cotton, sheep and goats.

- Beef Cattle Production:
  - Each year, over 5 million calves are born on over 130,000 cow-calf operations in Texas.

- Truth:
  - TX is a corn deficient state. 77% of the corn are imported.

www.beagsnart.org
DDGS: a Viable Option for Feed

Protein Content (%)

Samples
Protecting consumers and enhancing agribusiness through its feed and fertilizer regulatory compliance program, surveillance and monitoring of animal-human health and environmental hazards, and preparedness planning.

Office of the Texas State Chemist

FDA Recall Notices & Alerts

<table>
<thead>
<tr>
<th>Date</th>
<th>Product Type</th>
<th>Short Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 16, 2014</td>
<td>Feed</td>
<td>Purina Animal Nutrition LLC Recalls Poultry Feeds Due to Potential Health Risk ...more</td>
</tr>
<tr>
<td>Feb 05, 2014</td>
<td>Pet Food</td>
<td>Pro-Pet LLC Recalls a Limited Number of Dry Dog and Cat Foods Due to Possible Salmonella Contamination ...more</td>
</tr>
<tr>
<td>Jan 25, 2014</td>
<td>Pet Food</td>
<td>PMI Nutrition, LLC Recalls Red Flannel® Cat Food Due to Possible Salmonella Contamination ...more</td>
</tr>
<tr>
<td>Nov 27, 2013</td>
<td>Feed</td>
<td>Cargill Conducts Voluntary Recall of Select Nutrena® NatureWise® Meatbird and Chick Starter Feed ...more</td>
</tr>
</tbody>
</table>

What's new
- Now Hiring-Feed & Fertilizer Inspector
- Ammonium Nitrate
- Feb 2014 OTSC Newsletter
- Regulatory Science in Food Systems Graduate Certificate
- Feed Industry HACCP Website
- One Sample Strategy Website
- Testing on Private Samples (3-17-14)
Thank you for your attention