Aflatoxin Risk Management in Texas: A Regulatory Science Approach to the 2012 Drought in the Midwestern United States

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The Office of the Texas State Chemist (OTSC) is the state government agency within Texas that regulates the distribution and use of cereals and oilseeds contaminated by aflatoxin and fumonisin. In 2012-2013, OTSC monitored the contamination of maize grown in Texas and inbound maize from the 8 states (IA, IN, IL, KS, KY, MO, NE, OK) granted blending waivers by the Food and Drug Administration (FDA) to assess the risk posed by the Midwestern drought. Results from an evaluation of 285 Texas commercial grain establishments revealed that 4% of the Texas grown maize contained more than 20 ppb aflatoxin (the regulatory action level within Texas). The sampling of 48 transporters from the 8 states with blending waivers entering Texas revealed that 21% contained >20 ppb aflatoxin and were not properly labeled. Based on total demand by the Texas dairy industry for maize, a quantitative risk assessment was performed using @Risk to simulate the potential of aflatoxin contamination in dairy feed and milk. The model estimated an exposure of high aflatoxin maize (>20 ppb) to the Texas dairy industry was 4.7% and the likelihood of aflatoxin contaminated milk entering the food supply was 0.5% based on the quantitative risk assessment. This risk assessment was performed as a class project within the Regulatory Science in Food Systems graduate program offered at Texas A&M University. In the past 12 months, a total of 46 aflatoxin milk dumping cases have occurred in Texas. The Texas Department of State Health Service's milk program randomly samples and tests the milk supply and found approximately 0.6% of the milk contained aflatoxin in excess of 0.5 ppb aflatoxin M_1 during this time period. This study highlights the applicability of a quantitative risk assessment to predict contamination within the food supply and its usefulness to evaluate policy decisions involving food safety.