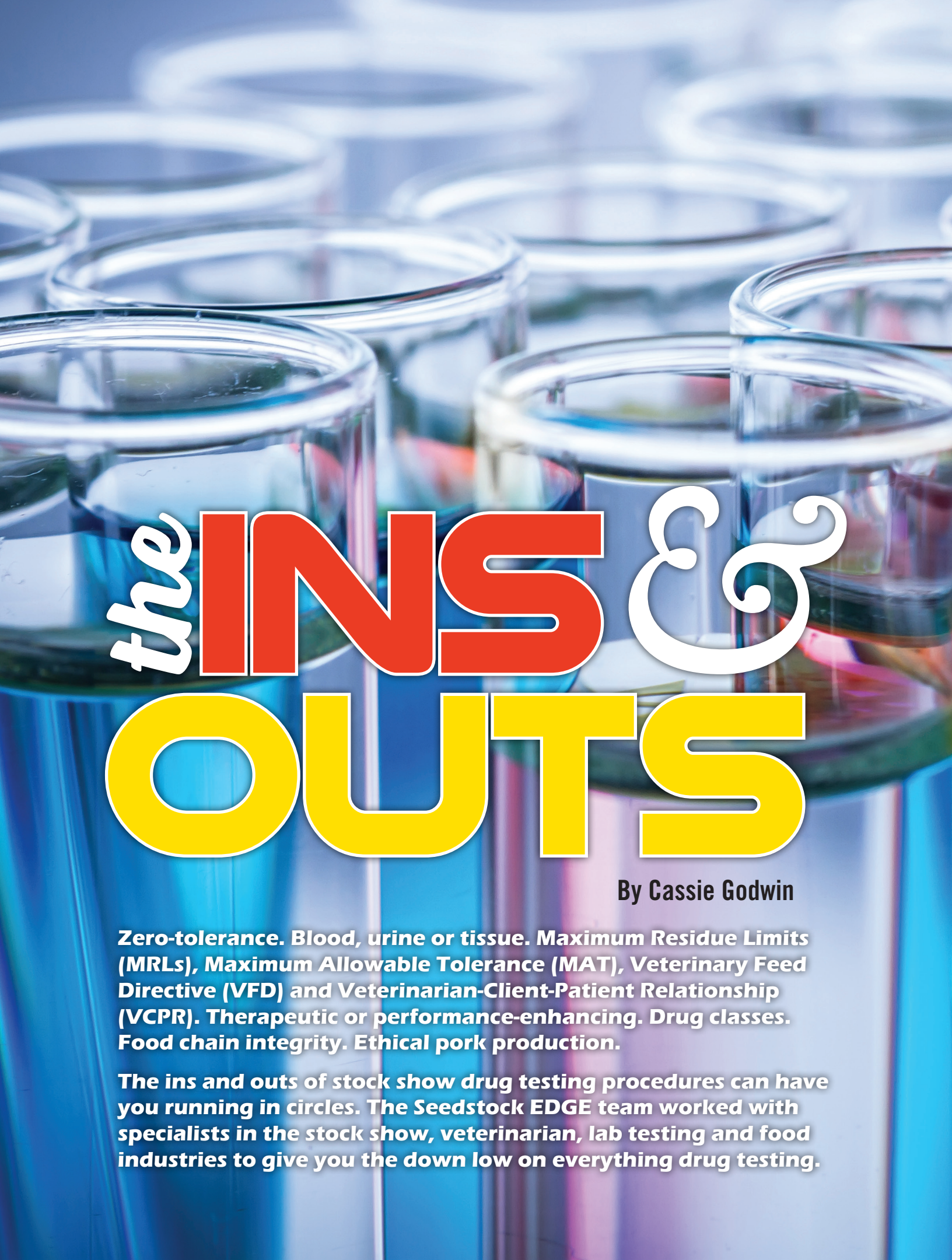

the INS & OUTS

By Cassie Godwin

Zero-tolerance. Blood, urine or tissue. Maximum Residue Limits (MRLs), Maximum Allowable Tolerance (MAT), Veterinary Feed Directive (VFD) and Veterinarian-Client-Patient Relationship (VCPR). Therapeutic or performance-enhancing. Drug classes. Food chain integrity. Ethical pork production.

The ins and outs of stock show drug testing procedures can have you running in circles. The Seedstock EDGE team worked with specialists in the stock show, veterinarian, lab testing and food industries to give you the down low on everything drug testing.

Q&A: STOCK SHOWS

Why do shows drug test animals?

The National Junior Swine Association (NJSA) has two primary goals for our drug testing program. First and foremost, we focus on maintaining food chain integrity and upholding a strong commitment to protecting the pork industry. Secondly, we want to hold our exhibitors to a high ethical standard to ensure a fair and level playing field at our competitive events. We always say our goal is not to "catch cheaters," but rather protect the long-term sustainability of our organization and the industry.

What are the consequences if an animal test positive for drugs?

It's important to remember that drug testing policies will vary from one show to the next. Examples of violation penalties may include the revoking of an exhibitor's awards and premiums, suspension from future participation over an assigned period of time or even expulsion from all future participation at an event. However, the consequences don't stop there. If an animal is harvested and is found to have a substance that violates the MAT levels established by the Food and Drug Administration (FDA) or is not approved for food animal use, food chain integrity is compromised, packer and consumer confidence may be affected and this jeopardizes the future of the show industry.

What are some key issues with drug testing programs?

I firmly believe one of the real issues with drug testing at youth stock shows stems from a disconnect between show managers, exhibitors and the animal protein industry's established standards. For example, the majority of shows use urine samples to test for the presence of drugs. Yet, the FDA sets allowable tolerance levels for a drug based on edible tissue. For livestock shows, it's unfair to obtain the quantitative levels of a drug in urine and compare that to the drug's threshold set by the FDA for edible tissue due to the variance in how a drug is metabolized in the animal. This makes it hard for show managers that would like to avoid a "zero-tolerance" policy when there are no accurate thresholds set for a drug when testing urine samples.

Do you think drug testing will continue to be a challenging topic? If so, why?

I think that testing will continue to be a challenge for stock shows due to the advancement in testing technology and the wide range of variables that come into play when a drug screening finds a positive test. How did the substance get there? Was the drug a performance enhancer or could it have been administered for animal welfare?

Please explain the differences in testing programs for different shows.

One of the big challenges exhibitors face is the variance in testing policies from one show to the next. Some shows may apply a "zero-tolerance" policy. In most cases, under a zero tolerance program, any substance

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V.P. of Member Outreach & Youth Development
National Swine Registry

found in the animal's sample will likely result in some form of penalty for the exhibitor and possibly additional family members. Other shows may have policies that are specific to classes of drugs. Violations of these policies may occur when a drug is found in a sample that was used off-label or is not intended for use in food animals. Keep in mind that some shows also test breeding animals and market animals. Some shows are non-terminal while others may be terminal. This may also determine why the show has chosen to implement specific testing policies.

How do you think drug testing programs could be improved across all shows?

Having open dialogue between all industry stakeholders in regards to drug testing at youth stock shows is important. Stock show managers need to work to educate themselves on testing technology and industry standards. Shows need to continuously educate exhibitors on the purpose of testing and clearly outline testing policies. Exhibitors need to embrace a culture of doing things right while becoming educated on best practices for animal care. I know some research is currently being done regarding variances in levels of a specific drug's presence in urine compared to other tissues. Initiatives like this will help stock show managers implement more effective testing programs in the future.

If you have any additional information or comments that you feel would be beneficial please add those.

I hope our exhibitors understand that the rules we put in place are for the best interest of all exhibitors, the NJSA and the industry. We really want to work with our exhibitors and have hog shows for a really long time. I feel that drug testing is just one example of our continued emphasis on understanding the bigger picture of food animal production and doing things right.

Q&A: VETERINARIAN

Why do shows drug test animals?

There are two main reasons that shows test animals for drugs. The first reason is to make sure that no exhibitors are using any performance-enhancing drugs that would give an unfair advantage to one exhibitor over another. The second reason is that even though these are show animals it is very important that we remember that these are food animals as well. The show industry must follow the same rules that the commercial industry follows to make sure that the meat entering the food chain is a safe product for the consumer.

What are some of the different categories of drugs that a show might test for?

Antibiotics, steroids, pain killers, cortisones and antihistamines.

Please explain the differences in the type of drugs (drugs approved for food animals, swine, etc.).

1. Approved for food animal
    a. These are drugs that have been approved by the FDA for food animals
        i. Some drugs are only approved for certain species and some are approved for more than one specie
        ii. If there is no drug approved for that specie or the drugs used that are approved for that specie have not worked then the veterinarian can use another drug that is approved for food animals to treat that disease or condition.
2. Unapproved for food animal
    a. There are also drugs that are not approved for food animals but are approved for companion animals
    b. Some of these drugs are also illegal to use in food animals and if found can lead to serious repercussions to the person who administrated the drug.
3. Some shows have different requirements
    a. Shows that only test for drugs that are not approved for food animals
        i. These are typically non-terminal shows and non 4-H or FFA affiliated shows.
    b. Shows that have zero-tolerance
        i. Most of the zero tolerance testing is done at terminal show or are affiliated with 4-H or FFA

DR. DANIEL HENDRICKSON
Four Star Veterinary Services

Please explain drug labels, withdrawal times and how drugs should be used.

1. The label on a drug bottle is approved by the FDA and contains many different things. The most important things that the veterinarian and the owner need to pay attention to are the following:
    a. The withdrawal time: This is the amount of time that it takes after an approved drug is given for the drug to clear from the animal and be below a maximum residue limit.
    b. Indications: This is a statement on the bottle that says how the medicine is to be used and what diseases or conditions that the drug is approved to treat.
    c. Dosage and Administration
        i. Dosage is the amount of the drug that is supposed to be given per a certain body weight. For example: 1cc per 50 lbs. This is very important to follow because there has been a lot of research done to determine the proper level in the body for the drug to work best. The administration tells the user how to give it. For example: intramuscular, subcutaneously, orally, etc. This is also extremely important; if given the wrong way than some drugs will not work properly.
        ii. If the dosage and administration are not followed correctly this can extend the amount of time that the animal can test positive for a drug.

What are some of the main issues regarding zero-tolerance testing programs?

Even though zero-tolerance keeps the testing program for a show very black and white, it also has some flaws. There are certain drugs that are not approved for food animals that absolutely should be zero-tolerance. The issue with zero-tolerance testing is that many times the drugs can still be found in the urine even though the proper withdrawal times have been followed. The withdrawal times are set so the amount of the drug in the meat is below a maximum residue limit and not when the drug can no longer be positively tested in the animal. Testing today compared to when most of the withdrawal times were determined

have become so much more precise that we can find levels that we have never been able to find before.

How do you think drug testing programs could be improved across all shows?

The reason that showing started in the beginning was for breeders to display their animals to prospective clients that may buy their genetics to produce market animals. Even though this has changed over the years, it is still very important that we keep this in the back of our minds. The sole reason that these animals are produced is for meat production. The reason that I bring all this up is that when we make these shows zero-tolerance we are holding these exhibitors to a higher level than we are the almost 150 million market hogs that are sold each year. Again, there are many drugs that are not approved for food animals that must be zero-tolerance to protect the consumer. I feel that there needs to be major research done to determine levels in the animal that will be tolerated at a show. These levels should be near the maximum residue limit set by the FDA that determine withdrawal times. At these levels, it is obvious that the exhibitor did not use that drug for performance-enhancement, but for treatment of that animal for a certain condition. Zero-tolerance is pushing exhibitors to a point that many animals are not being medicated the way they should because they are so afraid of a drug test finding something. As the show industry moves forward, I feel that testing for the terminal shows must become more standardized around the country. As a veterinarian, we get a large amount of phone calls asking what shows will test for and what can they use to treat a sick or lame animal that will not get them in trouble.

Q&A: TESTING LAB

TRAVIS MAYS
Section Head
Analytical Chemistry
(Drug Testing & Toxicology)
Texas A&M Veterinary
Medical Diagnostic
Laboratory

Please explain the differences between qualitative and quantitative testing.

A qualitative test refers to the confirmation that a drug is present in an animal's system at an unknown concentration (i.e. "presence or absence"). Certain drugs are not allowed to be present in a show animal's system. A qualitative test is adequate to detect these drugs because concentration is irrelevant.

A quantitative test uses known calibrators to measure how much of a drug is present in an animal's system. Certain drugs have therapeutic advantages and may be used to treat an illness or other medical ailments, and therefore may be allowed in a show animal, up to a certain concentration. However, at certain levels these drugs can be considered performance-enhancing. Quantitative testing can distinguish if the presence of a drug is in the therapeutic range or if the quantity exceeds the show's limitations.

Please explain the differences in how a substance may appear in an animal's system from muscle tissue compared to urine.

When a drug is administered to an animal it is distributed to the body's tissues, which includes the muscle. Muscle tissue can have a high affinity for certain drugs which can cause the drug to accumulate. Additionally, drug accumulation in muscle tissue can occur as a result of intramuscular injection at or near the injection site. The primary route of elimination for many drugs is via the kidney. Therefore, drug residues detected in urine are those that are being removed from the animal's body.

Please explain how the FDA creates MAT levels for tissue but not urine samples.

In order to protect the consumer, the FDA establishes tolerances for many drug residues in edible products of food producing animals. Because drug residues in urine are not a food safety concern, tolerances have not been established by the FDA. Many shows adopt a "zero-tolerance" policy for drug residues in urine. Certainly this type of policy is warranted for illicit drugs and drug residues detected in unapproved animal species. Scientific research needs to be conducted to better understand drug residues in urine so that livestock shows can make informed decisions with regards to creating policies and how to interpret drug testing results.

How do you think drug testing programs could be improved across all shows?

One important area that can be improved across all shows is maintaining chain of custody and sample integrity from the time the sample is collected until it is received by the testing laboratory. Shows need to minimize opportunities for sample contamination. Improper chain of custody can nullify a positive test result. Shows should make every effort to ensure samples are received by the laboratory in the best condition possible. Samples should arrive chilled, labeled and properly sealed with evidence tape.

If you have any additional information or comments that you feel would be beneficial please add those.

Drug testing, whether in animals or humans, is an ever-changing field. Advances in science and drug testing platforms are continuous. It is imperative that the drug testing laboratorys and livestock shows work together to develop and maintain a sound and effective program. Communication and education are the primary components that create a successful drug testing program.

Q&A: PORK INDUSTRY

Why do shows drug test animals?

The primary focus of the drug testing process is two-fold. Food safety, particularly in the case of market animals, is critical in the well-being of all facets of the livestock industry. From a commercial standpoint, there are strict guidelines regarding antibiotic use in market animals enforced by the FDA. It's expected that livestock exhibitions follow the same protocol for animals upon food-chain entrance. Shows also drug test to minimize the opportunity for families to gain a competitive advantage from the effects/side effects of antibiotics, diuretics, non-steroidal anti-inflammatories, bronchodilators and other products containing steroidal properties. The intent is to balance the field of competition while emphasizing an ethical approach to daily livestock care.

From a food safety and quality standpoint, why is it important to drug test animals?

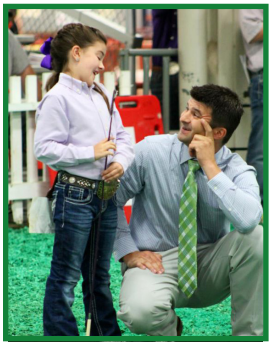
Food safety is critically important and at th top of the mind for many consumers. Today, people are much more cognizant of making healthy decisions based on their own knowledge and/or interpretation of the meat industry. Because of this, food safety ends up the main driver behind the Veterinary Feed Directive, which requires veterinarians to write a prescription for many antibiotics we utilize through feed. Our commercial hog producers here in the United States are scrutinized daily on animal husbandry and health practices. They are required to meet standards based off the Pork Quality Assurance (PQA) program and the Common Swine Industry Audit. A basic understanding of the PQA program and being taught by a PQA advisor is mandatory before showing swine. Upon completion of the PQA program, it is expected that a person understands the necessary requirements in regards to animal husbandry, and ultimately, families who own and show livestock are held to the exact same standards as our commercial counterparts. Drug testing market animals is essential to verify that food safety is not compromised.

From a food safety and quality standpoint, what are the consequences if an animal that tested positive for drugs enters the food chain?

The consequences can be dire. Depending on where in the food chain a tainted carcass is found can result in a multitude of issues, from packer/retailer relations to impacting trade with foreign countries. One thing the show industry does not want to be responsible for is negatively affecting our export relationships. The export market is key to the sustainability of U.S. hog production.

Please explain the food chain process and the importance of food chain integrity.

The food chain process is incredibly sophisticated and relieson efficiency, from receiving hogs to boxing product. The industry, on average, harvests 2.3 million hogs per



KANE CAUSEMAKER
Pork Procurement
JBS Swift

week. Quick math indicates little room for error as many plants have the capacity to harvest upwards of 1,000 head every hour. Upon harvest, carcasses then enter the cooler and are boxed for delivery. The end product will enter the United States food chain or will be exported to other markets. When a consumer sees "fresh pork" at a meat counter, it is just that. Farm to fork turnaround time can be very quick. We continue to produce the healthiest food supply possible.

How do you think drug testing programs could be improved across all shows?

From what I understand, drug testing procedures differ from one show to another. While it isn't necessary to create an identical testing platform for all shows, it is important for both show committees and show families to work toward clean and wholesome family events that exemplify the true intentions of traditional livestock exhibition. A high quality testing policy should maintain clarity through:

1. Identification of clear and transparent testing processes and procedures. Show committees need to be clear on all testing requirements. Show families need to make sure they clearly understand the requirements set forth.
2. Identification of test methodology and whether a test is based on qualitative or quantitative analysis.
3. Transparency in approach taken if a positive test occurs.
4. A clear justification period for both testing officials and show families on further processing of positive tests, with time to acclimate around developments brought forward by show officials.

If you have any additional information or comments that you feel would be beneficial please add those.

Levels of microbial residues and other analyses in livestock are monitored through Maximum Residue Limits. This list of MRLs for veterinary drugs in food sets out the level of residue that could safely remain in the tissue from a food producing animal that has been treated with a veterinary drug. The levels that are considered safe differ between countries, with Japan being the most stringent. The MRLs coincide with withdrawal

times that need to be understood and followed before marketing all swine, including retired showpigs.

Livestock that have been subjected to extra label use of products without a veterinarian prescription, that fail to meet MRL requirements or fail to meet zero tolerance rules lead to negative press and allow consumers to draw inadequate conclusions about our industry's integrity.

The bottom line is every single person that raises a pig, be it for commercial production or show is considered an American swine producer. Every producer is responsible for producing safe, nutritious and high quality pork. Even though there is a despairingly large difference between the show industry and commercial swine industry, both business entities are held to the same stringent guidelines. We are all one in the eye of the consumer.

Q&A: PORK INDUSTRY

ED TICE
Pork Procurement
Tyson Fresh Meats

From a food safety and quality standpoint, why is it important to drug test animals?

This is done to make sure that the product entering into the food chain meets all United States Department of Agriculture (USDA) regulations and is safe for the consumer.

From a food safety and quality standpoint, what are the consequences if an animal that tested positive for drugs enters the food chain?

If an animal test positive, the owner of that animal could be responsible for any cost associated with down time at the plant and recall on any product, which could result in thousands of dollars or higher. They could also have the privilege of selling livestock revoked for their lifetime.

Please explain the food chain process and the importance of food chain integrity.

Livestock are delivered to the plant weighted and receive some form of identification so at time of harvest ownership can be traced. After the animals are harvested, they are stored in a cooler. Then the carcasses are broken-down, boxed up and shipped to the point of purchase for the consumer. We have to ensure that the meat the customer is buying is a safe, wholesome product each and every time.

If you have any additional information or comments that you feel would be beneficial please add those.

I think exhibit animals should, at some point, have been seen by a licensed veterinarian, so that they have a true Veterinarian-Client-Patient Relationship and meet PQA standards. It's important, now more than ever, that we have a clear understanding of the pork industry; not just the show industry, and the impact our actions can have.

For a complete list of Maximum Residue Limits, visit pork.org/mrl/.