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FDA VETERINARIAN

STATEMENT BY HHS SECRETARY TOMMY G. THOMPSON Regarding Release of Harvard BSE Risk Assessment

A Harvard University study released today has found that thanks to the joint efforts of the Department of Health and Human Services and the Department of Agriculture, Bovine Spongiform Encephalopathy (BSE)—or "Mad Cow Disease"—poses only an "extremely low" risk to our consumers and agriculture.

The study shows that even if the disease should appear in the United States, it would be contained by the safeguards already put in place by the Food and Drug Administration and USDA. This is a reassuring finding, but it also means that we cannot let those safeguards down, and that we must constantly keep improving them.

Protecting our country against BSE has been among my top concerns since I took my present post. One of my first initiatives was the launching of an action plan to protect this country against BSE.

Today, I want to join the Harvard researchers in emphasizing the critical importance of FDA rules that protect our herds from BSE. As the Harvard study demonstrates, these rules are a strong firewall against the spread of BSE in American herds.

Since these measures were put in place in 1997, FDA has gone to great lengths to impress on all renderers, feed mills and similar establishments in this country that these rules are vital for the health of our consumers, agriculture, and economy. As part of the program, FDA and its state feed inspector colleagues have developed a special guidance for the animal feed industry, held public meetings with stakeholders, and conducted more than 12,000 inspections and re-inspections of the more than 10,000 renderers and feed mills in the U.S. These inspections will continue.


Photo by Scott Bauer

FDA feed rules play a critical role in protecting our herds from BSE.

Support for FDA's measures has been gratifying. Industry and government agree: American consumers can and must be protected. Today, we are well on the way to achieving full compliance, and we must not settle for less.

There are still some components of the animal feed industry that are failing to live up to the FDA standards. I want it to be clear that we intend to enforce FDA's rules with increased vigor.

FDA, USDA, and our state and private sector partners deserve to be congratulated on their performance in combating BSE. But we cannot rest on our success to date. As the Harvard assessment makes clear, continued vigilance and concern are essential.

This statement was issued Friday, November 30, 2001. □

VMAC MEETING SCHEDULED FOR JANUARY 2002

The FDA Veterinary Medicine Advisory Committee (VMAC) will meet on January 22, 23, and 24, 2002, from 8:30 a.m. to 5 p.m., at the DoubleTree Hotel, Plaza Rooms I, II, and III, 1750 Rockville Pike, Rockville, MD. This FDA public advisory committee meeting will be open to the public. The general function of the committee is to provide advice and recommendations to the Agency on FDA's regulatory issues. At the January meeting, VMAC will seek recommendations on the issues of import tolerances under the provisions of the Animal Drug Availability Act of 1996 (ADAA), and on the antimicrobial drug effects on pathogen load in food-producing animals as pathogen load relates to the pre-approval process of new animal drug applications (NADAs). Information concerning the

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U.S DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION CENTER FOR VETERINARY MEDICINE

VMAC MEETING SCHEDULED FOR JANUARY 2002 (Continued)

discussion of import tolerances can be found in an August 13, 2001 CVM UPDATE and in a *Federal Register* notice of August 10, 2001.

Information concerning the issues of pathogen load will be made publicly available to the VMAC members and the public in advance of the meeting and posted on CVM's Home Page. A limited number of paper copies of the background information will be available at the meeting.

Interested persons may present data, information, or views, orally or in writing, on the issues pending before the committee. Written submissions may be made to Aleta Sindelar, Center for Veterinary Medicine (HFV-3), Food and Drug Administration, 7519 Standish Place, Rockville, MD 20855. Written comments must be submitted by January 4, 2002. Oral presentations from the public will be scheduled between approximately 1:30 p.m. and 4:15 p.m. on January 22, and 8:45 a.m. and 11:00 a.m. on January 24, 2002. The time allotted for each presentation may be limited. Individuals wishing to make oral presentations should notify Aleta Sindelar (telephone number 301-827-4515 or address above) before January 4, 2002. They should submit a brief statement of the general nature of the evidence or arguments they wish to present, the names and addresses of proposed participants, and an indication of the approximate time requested to make their presentation. They will be notified of their allotted time prior to the meeting. Their entire statements should be submitted for the record.

Additional information about the VMAC meeting will be included on the FDA/Center for Veterinary Medicine Home Page. Up-to-date information on the VMAC meeting is also available on the FDA Advisory Committee Information Line, 1-800-741-8138 (301-443-0572 in the Washington, DC area), code 12546.

□

NRSP-7 HOLDS SEMI-ANNUAL COMMITTEE MEETING

by Meg Oeller, D.V.M.

The USDA's Minor Use Animal Drug Program, National Research Support Project #7 (NRSP-7) held its semi-annual meeting of the technical committee and administrative advisors on October 22 and 23 in Rockville, MD and Washington, DC. The spring meeting is hosted each year by one of the four regions, but the fall meeting is always held in the Washington area to provide an opportunity for input from members of FDA's Center for Veterinary Medicine (CVM).

The purpose of the NRSP-7 Minor Use Animal Drug Program is to address the shortage of minor use animal drugs by funding and overseeing the efficacy, animal safety, and human food safety research and environmental assessment required for drug approval. The scope of the program includes minor species of agricultural importance, and generally excludes companion animals.

Attendance

The technical committee is made up of a National Coordinator, 4 Regional Coordinators, 4 Regional Administrative Advisors, and liaisons from USDA and FDA. The National Coordinator is Dr. John Babish (Cornell University). The Regional Coordinators are Dr. Arthur Craigmill (University of California, Davis), Dr. Alistair Webb (University of Florida), Dr. Robert Holland (Iowa State University), and Dr. Paul Bowser (Cornell University). The Administrative Advisors are Dr. Kirklyn Kerr (University of Connecticut), Dr. John Nielson (University of Florida), Dr. David Thawley (University of Nevada), and Dr. Don Robertson (Kansas State University). The USDA representative is Dr. Larry Miller (Washington, DC) and the FDA liaison is Dr. Meg Oeller (Rockville, MD). This meeting was also attended by the National NADA coordinator for Aquaculture, Rosalie "Roz" Schnick and Dr. Mark Feldlaufer of the USDA Bee lab in Beltsville, MD, as well as by reviewers and managers from FDA/CVM.

This meeting was postponed from its originally scheduled dates in September due to the upheaval in travel arrangements following September 11. Because of the change, three of the four administrative advisors were unable to attend. Dr. Don Robertson was their sole representative at this meeting.

Welcoming Remarks From Dr. Sundlof

The Director of CVM, Dr. Stephen Sundlof, welcomed everyone and explained that the coming year looks very promising for the Center with a proposed budget increase. He pointed out that CVM was still working under a continuing resolution pending passage of the budget. In the next year, a high priority will be on-farm and feed mill inspections based on Bovine Spongiform Encephalopathy (Mad Cow) concerns.

Strategic planning at CVM is starting again with an emphasis on "back to basics". Some items of special interest include controlling internet

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FDA Veterinarian

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pharmacies, reduction of the application backlog through the use of consultants to find efficiencies, and the development of tolerances & testing for residues in imported foodstuffs. A contract has been awarded to ICF Consulting to identify medications used in aquaculture around the world. The U.S. is concerned about a competitive disadvantage compared to overseas producers, especially in the case of seafood from Southeast Asia. Some of this may be corrected by the requirement for exporters to have Hazard Analysis Critical Control Point (HACCP) plans in place, since such plans require disclosure of medications used on farmed fish.

Antimicrobial resistance development remains a major concern. A new guidance document is planned for publication in the Spring. Dr. Sundlof noted that there are still problems enforcing prudent use of antibiotics. Links are being established with State veterinary boards to assist with enforcement in the areas of prudent use of antibiotics, compounding, and catalog sales. Dr. Sundlof also said that CVM has received a special allotment of $3 million for studies on subtherapeutic drug use. He was questioned about the advisability of NRSP-7 pursuing a project for florfenicol in sheep. He answered that antimicrobial resistance requirements should not be sufficient to discourage such a project.

National Coordinator's Report

Dr. Babish reported on his meeting with the North Eastern Experimental Station Directors. He was encouraged to make visits to other regions to make sure they are aware of the program. The Southern region will need special attention as they face the future retirement of Administrative Advisor John Neilson and select his replacement.

The new NRSP-7 brochures have been printed but the web site address was inadvertently omitted. A label with the address will be affixed to the brochure before they are distributed. The brochure includes a description of the program's mission, background, and organization as well as a list of the contact information for the members of the technical committee and administrative advisors. On the back of the brochure is an abbreviated Animal Drug Request form so that interested persons may suggest new projects for the program to pursue.

Administrative Advisors' Report

Dr. Don Robertson said that John Babish sent NRSP-7 update letters to major stakeholders in the sheep, goat, gamebird, and aquaculture industries. He advised that we should make an effort to maintain and expand such relationships.

USDA Representative's Report

Dr. Miller related that the USDA budget is on hold. The House budget is the same as last year but the Senate shows an increase. He described the plan for the next day's meeting with administrators at USDA and the order of presentations that we should give.

Regional Coordinators' Reports

NORTHEAST REGION: Dr. Paul Bowser.

Although many of these projects are intended to support species grouping, the data will be accumulated to support individual drug approvals for the drugs under study. Current projects include hydrogen peroxide for bacterial gill disease in finfish, oxytetracycline for finfish, sulfadimethoxine/ormetoprim (Romet-30™) for finfish and sulfadimethoxine/ormetoprim (Rofenaid™) for pheasants.

SOUTHERN REGION: Dr. Alistair Webb

Dr. Webb reported that current projects include ivermectin for rabbits, fenbendazole for deer, lasalocid for deer and goats, fenbendazole, nitarsone, and zoalene for gamebirds, and carp pituitary extract for fish.

Most discussion centered on Dr. Kelly's (Mississippi State University) proposal to complete the carp pituitary extract target animal safety work. Dr. Kelly proposed both extension of species covered as well as an extensive list of tissues for histopathology. NRSP-7 has provided administrative assistance, but has not funded this work previously. The consensus at the meeting was that it is a needed production tool and should be supported.

NORTH CENTRAL REGION: Dr. Robert Holland

The major current project is the CIDR-G intravaginal progesterone device for sheep. There have been numerous complications of the project resulting from the sale of the device from the original New Zealand manufacturer. We hope to resolve these problems so that this approval can be pursued. The U.S. sheep industry lists this product as its number one need.

WESTERN REGION: Dr. Arthur Craigmill

Dr. Craigmill reported on several completed and inactivated projects. Those completed include a pharmacokinetic study for ceftiofur in alpacas and llamas and another on pharmacokinetics and residue depletion of oxytetracycline in sheep.

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Photo by Scott Bauer

Current projects include ivermectin pour-on for bison, strontium chloride in salmonids, and pirlimycin for dairy goats. The bee projects were discussed later by Dr. Feldlaufer. Some species grouping work is underway in gamebirds.

New Projects

NORTHEAST REGION – A new project is planned for goats, although the details are not yet determined.

SOUTHERN REGION – A new project with imidocarb for babesiosis in cattle is projected, but not certain pending sponsor agreement.

NORTH CENTRAL REGION – Three new projects have been proposed. Final decisions are pending additional information. The proposed projects are for Apitol for bees to treat varroa mites, florfenicol for mycoplasma infections in veal calves, and a treatment for mastitis in ewes.

WESTERN REGION – A new project will be started in the coming year for florfenicol in sheep & goats for bacterial respiratory infections and possibly also for a foot rot claim.

Other Reports

Dr. Mark Feldlaufer of the USDA bee lab in Beltsville discussed his work in support of New Animal Drug Applications for lincomycin and tylosin for American foulbrood in honeybees. The target animal safety study data have been submitted, the residue depletion studies are done, and effectiveness studies are underway. Dr. Oeller has obtained letters from CVM agreeing that antimicrobial resistance studies will not be needed for these projects. The environmental assessments are in progress.

Roz Schnick distributed her handout, "Update on the Activities of the National Coordinator for Aquaculture New Animal Drug Applications." She described the progress of the active projects of the Federal-State Aquaculture Drug Approval Partnership Project. These projects include claims for Aqui-S™ (anesthetic), Chloramine-T, Copper Sulfate, Florfenicol, hydrogen peroxide, and oxytetracycline. This group is also conducting studies to support species grouping.

Active NRSP-7 Projects

Drug	*Route of Administration*	*Species*	*Indication*	*Region*
IVERMECTIN	injection	rabbits	ear mites	S
TYLOSIN	soluble powder	honey bees	American foulbrood	W
LASALOCID	oral (feed)	pheasant	coccidiosis	S
TILMICOSIN	injection	veal calves	respiratory infections	NC
PROGESTERONE	CIDR	sheep	estrus synchronization	NC
HYDROGEN PEROXIDE	topical	various fish	bacterial gill disease	NE
CARP PITUITARY	injection	various fish	spawning aid	S
SULFADIMETHOXINE/ ORMETOPRIM	oral (feed)	pheasants	bacterial infections and coccidiosis	NE
NITARSONE	oral (feed)	partridge	blackhead	S
ZOAMIX	oral (feed)	pheasants	coccidiosis	S
FENBENDAZOLE	oral (feed)	pheasants, partridges & quail	gapeworm, capillaria	S
OXYTETRACYCLINE	oral (feed)	finfish	bacterial infections	NE
LASALOCID	oral (feed)	deer	coccidiosis	S
STRONTIUM CHLORIDE	immersion	finfish	otolith marking	W
LASALOCID	oral (feed)	goats	coccidiosis	S
PIRLIMYCIN	intramammary	goats	mastitis	W
LINCOMYCIN	soluble powder	honey bees	American foulbrood	W
SULFADIMETHOXINE/ ORMETOPRIM	Oral (feed)	finfish	Bacterial infections	NE

FDA'S NRSP-7 Liaison Report

The Minor Use/Minor Species Animal Health Act of 2001 (the MUMS Bill) has been introduced in both houses of Congress and is continuing to add co-sponsors. If enacted, this legislation would make incentives available to pharmaceutical sponsors, allow for conditional approvals of MUMS drugs, and allow legal marketing of some products for non-food-producing animals under an indexing system.

Current projects were reviewed and some were reclassified as 'inactive' for the time being. The committee discussed Investigational New Animal Drug (INAD) investigators who are not producing or submitting their data. In some cases, producers/collaborators might more appropriately get the drugs under the new Compliance Policy Guide on

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Photo by Peggy Greb

extralabel use of drugs in feed for minor species (CPG 615.115). Those groups should either continue to submit effectiveness data whenever they use the drug under the INAD, or they should use the CPG to acquire needed medicated feeds. Other groups that are studying drugs under an NRSP-7 INAD and not submitting data at all must either submit the data as promised, or have the INAD file inactivated.


Photo by Jack Dykinga

It is important that NRSP-7 follow the rules that allow unapproved uses of these drugs under its INADs. It is imperative that this data, including Notice of Claimed Investigational Exemption forms, be submitted in a timely manner so that inspections can be scheduled, and slaughter authorizations can be kept up to date. CVM can take regulatory action against sponsors and investigators who fail to comply with these requirements. NRSP-7 must administer its INAD files in full compliance with the laws and regulations.

Species Grouping

This concept involves demonstrating, usually through pharmacokinetics, that similar species may be grouped for the purposes of demonstrating effectiveness, target animal safety, and human food safety. One outcome may be that a representative species can be studied to provide data to support the inclusion of similar species on the label of a new animal drug. This is probably most needed in aquaculture where there are literally hundreds of species and it is not practical to test the drug on them all. Other groups also could benefit from such research. This includes gamebirds (pheasants, partridges, and quail), deer (white tail, red deer, elk, etc.), and ratites (ostriches, emus, and rheas). It may be that the research will show that the species are not similar, or are not similar for some classes of drugs. Learning what is and is not suitable for grouping will be very valuable in making drug approval for minor species more efficient.

Dr. Renate Reimschuessel explained the CVM's Office of Research strategy in the pursuit of rational species grouping. They are studying multiple species (trout, tilapia, catfish, yellow perch, toadfish, salmon); under varying conditions (warm & cold/fresh & sea water); using multiple drugs (albendazole, ivermectin, flumequine). They are looking at drug levels in muscle. Badaruddin Shaikh presented data for albendazole in trout and tilapia (the sulfoxide and sulfone are the metabolites measured).

Dr. John Babish also discussed his species grouping approach. He is looking at characterizing species by drug metabolism ability with emphasis on P450 & CYP families. He is characterizing these with western blot & enzymatic analysis. The fish species he and Dr. Bowser are studying are rainbow trout, tilapia, walleye, yellow perch, summer flounder, hybrid striped bass, and channel catfish. The human based enzyme antibody assays cross-react with fish and gamebirds (quail).

GLP Discussion

This discussion centered on inspections and the mechanism of a data audit. Dr. Lynn Friedlander, of CVM, explained the requirements for inspections, mechanisms for data audits, and information that should be included in human food safety data submissions. It was a very useful discussion.

Spring 2002 Meeting

The Spring meeting of the NRSP-7 Technical Committee and Administrative Advisors will be held in Davis, California on April 29 and 30, 2002. There will be a tour of the University's sheep dairy followed by the business meeting.

DAY TWO

The second day of the meeting was held at the USDA Waterfront Offices. This meeting was attended by the NRSP-7 members and Roz Schnick. Midmorning, the group was joined by USDA administrators.

International Workshop

The NRSP-7 program traditionally hosted a workshop on a minor species concern every 2 years. The last workshop was held in 1996 on the topic of "Drug Approval for Minor Species in the 21st Century". After 1996, resources were directed toward activities other than the sponsorship of workshops. The program planned to hold a workshop next September or October at a hotel in the Dulles airport area.

The committee decided to postpone the workshop until September 2003 in view of overseas travel fears. Dr. Webb and Dr. Craigmill are co-chairing the meeting. They circulated a draft program outline. The current plan is to have the workshop center on international issues for minor species and minor uses. The meeting will be held in cooperation with Global FARAD (the Food Animal Residue Avoidance Databank). The committee will investigate holding the workshop in Baltimore.

Meeting with USDA Administrators

The group then met with Gary Cunningham, Ted Wilson, Bill Wagner, Gary Jensen, and Dave Morris of USDA. Several members of the committee gave presentations on the NRSP-7 program, including, background on the program, species grouping efforts, species project summaries, and the role of FDA/CVM. A productive discussion followed.

NRSP-7 Website

Dr. Webb provided an overview of the new and improved NRSP-7 website: *http://www.nrsp7.org* . The website currently provides links to minor species group websites, updated names and addresses of

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SURVEYING FEED COMMODITIES FOR ANTIBIOTIC RESISTANCE

by David Wagner, Ph.D.

Widespread dissemination of resistance to antibiotics resulting from the selective effect of drug use in food animals may have important ramifications for both human and animal health. A critical question relevant to this ecological issue is: What is the source of the resistance determinants? Are they always present in the environment at low, virtually undetectable levels or are they introduced from outside? Are there management practices that could minimize or eliminate resistance development? Answers to these questions could lead to improvements in our ability to control development and dissemination of resistance to antibiotics and thereby optimize their efficacy, extend their useful lifespan, and minimize possible negative health consequences.

Animal feeds and feed commodities may serve as vectors for the dissemination and maintenance of resistance determinants in the animal production environment and thereby in the food supply. The commercial feed industry, during 2000, supplied an estimated 119 million tons of feed that were required to support intensive integrated animal production in the United States. This figure does not include the millions of tons of feed mixed on farms. With the exception of the cereal grains and grasses, virtually all other commodities that comprise animal feeds are by-products of other industries including the animal production industry. The rendering industry reported the production of 8.8 billion pounds of protein meals in 2000. A large portion of these products is incorporated into animal feeds. It is therefore not unreasonable to view the feed industry as a recycling business that utilizes by-products of high nutritional value from other industries, to provide complex nutrient sources for animal production.

Recently, the issue of antibiotic resistance resulting from the use of antibiotics in animal production has once again become a significant concern to the Center for Veterinary Medicine (CVM) and other national and international health agencies. The potential for resistance development in animal production settings to negatively impact human therapeutic efficacy is being revisited. The role that feed may play in the dynamics of antibiotic resistance development and dissemination in the animal production environment is essentially unknown. The possibility that feed may serve not only as a vector for resistance but also may function to maintain and concentrate resistance due to its recycling characteristic may be important. There are essentially no data available to assess the potential role of animal feed to serve as a vector for the transmission and/or maintenance of antibiotic resistant bacteria or resistance determinants in the animal environment.

During FY 2000, CVM's Division of Animal and Food Microbiology initiated a preliminary survey of animal feed commodities to assess their role in antibiotic resistance dissemination. Poultry by-product meal, meat and bone meal, blended animal proteins, and whole cereal grains (corn and oats) were the first products cultured. *Enterococcus* spp. were isolated, identified to species, and tested for susceptibilities to 17 antibiotics using a broth microdilution assay. The antibiotics are incorporated in a customized Gram positive panel that is used in the National Antimicrobial Resistance Monitoring System (NARMS) and produced by TREK Diagnostics, Inc. Eleven of the antibiotics are either used directly in the feed or water of animals or they are members of drug classes used in these ways.

A total of 175 samples were cultured. All were positive for enterococci except for corn (41%, 24/58) and poultry meal (95%, 19/20). *Enterococcus faecium* was by far the most prevalent *Enterococcus* species, accounting for 72% (167/232) of the isolates recovered. *Enterococcus faecalis* was rarely recovered from any of the samples tested. Nine of the twelve isolates recovered came from corn. This is interesting because *E. faecalis* is the most common cause of human infections accounting for more than 80% of reported cases. It is also the species most commonly isolated from animal production environments and from the intestinal contents of animals including humans. All of the samples of oats were positive for enterococci (36) but no *E. faecalis* were isolated. The results thus far show that enterococci are widely disseminated in the environment and can readily be isolated from feed commodities.

Resistance to antibiotics used in human therapy was primarily seen in isolates recovered from meat and bone meal and was observed for tetracycline, streptomycin, and erythromycin. Reduced susceptibilities to antibiotics used only in animal production were observed in significant proportions of the isolates from all the rendered animal by-products tested especially bacitracin susceptibility.

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NRSP-7 HOLDS SEMI-ANNUAL COMMITTEE MEETING (Continued)

committee members, interactive Animal Drug Request Forms for new project requests, and a "Frequently Asked Questions" section. Plans are underway to implement features including "Breaking News", feature articles, a searchable database of animal drugs, and a searchable database of NRSP-7 activities. Please visit the site.

The day-and-a-half meeting was an excellent opportunity to provide an update on the status of all aspects of the program as well as an opportunity to expand partnerships with other organizations.

For more information about NRSP-7, please visit our website *http://www.nrsp7.org* or call Dr. Meg Oeller at (301) 827-3067.

Dr. Oeller is a Veterinary Medical Officer in CVM's Office of the Director. □

SURVEYING FEED COMMODITIES FOR ANTIBIOTIC RESISTANCE (Continued)

Resistance to ciprofloxacin was detected, but only in the isolates recovered from the cereal grains. None of the 167 isolates of *Enterococcus faecium* were determined to have minimum inhibitory concentrations (MIC) for Synercid above the NCCLS breakpoint of 4 ug/ml. This observation stands in stark contrast to *E. faecium* isolates recovered from litter taken from poultry production houses where about 65% of *E. faecium* are resistant to Synercid at concentrations up to 32ug/ml. This difference between feed and production environmental isolates probably demonstrates the selective effect elicited by virginiamycin use in feed. No resistance to Linezolid or penicillin, drugs of critical importance to human therapy was observed in any of the feed isolates tested.

What seems to be most remarkable about the data collected to date is the limited amount of antibiotic resistance associated with isolates from feed commodities relative to that seen in animal production environments. For example, *Enterococcus* isolates from poultry by-product meal are very susceptible to drugs such as penicillin and Synercid; whereas, isolates recovered from poultry production houses are very resistant with 75% and 65% of the isolates being resistant to the two drugs respectively. One question of interest resulting from these data is: Why are the isolates associated with poultry meal not resistant when those from live poultry are? The apparent decrease in susceptibility of isolates recovered from feed to the commonly used production drugs bacitracin, tylosin, and lincomycin may be an issue of concern to animal production.

This survey activity is continuing and will be expanded during 2002 with the involvement of the FDA's Office of Regulatory Affairs which will conduct a national sampling program of rendered feed commodities. These samples will be submitted to CVM's Office of Research for culturing and analysis. In addition to *Enterococcus*, *E. coli,* salmonellae, and *Campylobacter* will be selectively cultured and tested for antibiotic susceptibility profiles.

Dr. Wagner is a Research Animal Scientist in CVM's Division of Animal and Food Microbiology. □

NEW CVM OFFICIAL FOR INTERNATIONAL ACTIVITIES

CVM is pleased to announce that Dr. Merton V. Smith has been selected to fill the position as Special Assistant for International Activities, Office of the Director, CVM.

Dr. Smith comes from FDA's Office of International Programs (OIP) in the Office of the Commissioner. For the past 16 years, Dr. Smith has held a number of positions in OIP and its predecessor unit, the International Affairs Staff, including the Africa and Near East Desk Officer, the Americas Desk Officer, the Multilateral Programs Desk Officer, and the International Harmonization and Trade Affairs Desk Officer. Most recently, he has been the Acting Director, International Agreements Staff, OIP.

Dr. Smith was detailed to the Office of the U.S. Trade Representative in the Executive Office of the President for a year ('93-'94) and worked to finalize both the North American Free Trade Agreement and the Uruguay Round of Multilateral Trade Negotiations, the latter establishing the World Trade Organization.

Dr. Smith received his B. A. degree from the University of Virginia, and M. S. and Ph.D. degrees in food science and nutrition from Virginia Polytechnic Institute, completing research in the area of food-borne infections and intoxications. He also received his J. D. degree at Catholic University, focusing on environmental, trade, and administrative law. Dr. Smith is currently a member of the District of Columbia Bar. He may be reached at 301-827-6239. □

COMMENT PERIOD EXTENDED FOR IMPORT TOLERANCES ANPRM

The Food and Drug Administration (FDA) is extending to March 11, 2002, the comment period for the advance notice of proposed rulemaking (ANPRM) that appeared in the August 10, 2001, *Federal Register*. The ANPRM stated that FDA intends to propose a regulation for establishing import tolerances, and solicited comments on issues related to the implementation of the import tolerances provision in section 4 of the Animal Drug Availability Act of 1996 (ADAA). The ADAA authorizes FDA to establish drug residue tolerances (import tolerances) for imported food products of animal origin for drugs that are used in other countries, but that are unapproved new animal drugs in the U.S. Food products of animal origin that are in compliance with the import tolerance will not be considered adulterated under the Federal Food, Drug, and Cosmetic Act and may be imported into the United States. FDA is extending the comment period to provide stakeholders sufficient opportunity to comment at the January 22-24, 2002, public advisory committee meeting and within sixty days thereafter.

Written or electronic comments on the ANPRM should be submitted to the Dockets Management Branch (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Room 1061, Rockville, MD 20852, by March 11, 2002. Electronic comments should be submitted to *http://www.fda.gov/dockets/ecomments*. Comments should reference Docket No. 01N-0284.

Additional information on the ANPRM is included in the August 10 and December 7, 2001, *Federal Register* (*http://www.fda.gov/OHRMS/DOCKETS/98fr/081001a.htm* and *http://www.fda.gov/OHRMS/DOCKETS/98fr/120701c.htm*,) and from Frances Pell, Center for Veterinary Medicine (HFV-235), Food and Drug Administration, 7500 Standish Place, Rockville, MD 20855, 301-827-0188, E-mail: fpell@cvm.fda.gov. □

8 USE OF ANTIMICROBIALS IN HATCHERIES: A FIELD ASSIGNMENT

by Linda E. Silvers, D.V.M., M.P.H. and Charlotte D. Spires, D.V.M., M.P.H., D.A.C.V.P.M.

Recently, the Centers for Disease Control and Prevention (CDC) reported the emergence of domestically acquired ceftriaxone-resistant *Salmonella* in humans in the U.S. This antimicrobial resistance was detected by the routine surveillance of the National Antimicrobial Resistance Monitoring System (NARMS). Because ceftriaxone-resistant *Salmonella* has become a public health concern, the Center for Veterinary Medicine (CVM) Office of Surveillance and Compliance issued a high priority assignment directed at identifying the use of ceftiofur and other antimicrobial drugs in a nationally representative sample of poultry hatcheries in the United States.

Historically, populations of bacteria have impacted human and animal health, without facing much of a challenge to their own well-being. That situation changed in the early 1940's, as antimicrobial drugs, the first significant weapons in the fight against bacterial illnesses, were widely marketed. While antimicrobial drugs have been an extremely effective treatment, over time, bacteria that are resistant to antimicrobial drugs have emerged.

Today, almost all bacteria that were universally susceptible to antibiotics are now resistant to at least some of these drugs, and some bacteria are resistant to many different antibiotics.[1] Selective pressure exerted by antimicrobial drug use can result in the development of antimicrobial resistance.[2] The use of antimicrobials in human medicine as well as in food animal production may promote this type of selection.

Antimicrobial drugs are used in animal agriculture to treat disease, to prevent disease, and to promote growth/feed efficiency. While it is known that the administration of antimicrobials to food animals can select for resistance among bacteria which may subsequently be passed to humans through the consumption of food or by direct contact, the exact magnitude of the human health impact has been difficult to quantify.[3] Some human bacterial infections acquired from food animal sources may not respond to antimicrobial drugs chosen for treatment because a similar drug was given to the food animal and resulted in the development of resistant organisms.

Approximately 1.4 million cases of salmonellosis occur in the U.S. each year, most in children and the elderly, and an estimated 600 of these cases are fatal.[4] Ceftriaxone, a third generation cephalosporin, is the drug of choice for treating invasive *Salmonella* infections. Resistance to this drug is a concern, particularly in children, since fluoroquinolones, an alternative treatment, are not approved for use in children.[4]

Because of cross-resistance between the veterinary drug ceftiofur and the human drug ceftriaxone, and because food animals are the predominant source of domestically acquired *Salmonella* infections, ceftiofur use may be contributing to ceftriaxone-resistant *Salmonella* which are subsequently acquired by people via food consumption or by direct contact. Ceftiofur is the only expanded spectrum cephalosporin drug approved for systemic use in food animals in the U.S. This drug is currently approved for therapeutic use in cattle, swine and poultry. The majority of cephalosporin-resistant *Salmonella* express an extended-spectrum -lactamase, which is able to hydrolyze oxyimino cephalosporins and monobactams, but not the cephamycins. However, recent reports indicate that several organisms of *Enterobacteriaceae* have obtained plasmids encoding AmpC-like-lactamases that hydrolyze the cephalosporins as well as the cephamycins such as cefoxitin and ceftriaxone. Resistance to ceftriaxone and ceftiofur is mediated by a cephalomycinase (CMY) encoded by the bla_{CMY} gene, and eleven bla_{CMY} variants have been described to date. Recent research conducted in the Office of Research at CVM identified plasmid-mediated AmpC-like-lactamases in *E. coli* and *Salmonella* isolated from food animals and retail meats. These bla_{CMY} genes were further shown to be transferred between different bacteria.[5]

The Assignment Memorandum included a six-page questionnaire to identify hatchery compliance with 21 CFR Part 530, which addresses extralabel drug use in animals. Extralabel drug use is legal if requirements in the regulation are satisfied (e.g., use of the drug by or on the lawful order of a licensed veterinarian within the context of a valid veterinary-client-patient relationship). Prior notice was not given to personnel at inspected sites. The Assignment Memorandum, which was sent to District Directors, Directors of Investigation Branches, and FDA District Offices, required the following actions: Inspection of the hatchery to determine compliance with 21 CFR 530, completion of all inspections during FY01, coordination of follow-ups by Districts so that as many visits as possible could be conducted on the same day and collaboration with CVM so that a representative from the Division of Epidemiology could work with Field Personnel during each inspection. Directions to Field Personnel included: 1) Review all medication/treatment records to identify antimicrobials used by the firm, 2) Review labels on the drugs found at each site to ensure that use is per approved label directions, and 3) Evaluate any extralabel use to determine if the drug was prescribed by a veterinarian within the context of a valid veterinary-client-patient relationship and satisfied other requirements of 21 CFR Part 530.

The hatcheries inspected were randomly selected in an effort to focus

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USE OF ANTIMICROBIALS IN HATCHERIES: A FIELD ASSIGNMENT (Continued)

on use patterns that are representative of most poultry hatcheries in the U.S. Epidemiologists and microbiologists from CVM's Division of Epidemiology collaborated with local FDA field investigators as well as with members of CVM's Division of Compliance to inspect 37 chicken and turkey hatcheries. The size of the hatcheries and the types of operations varied. A questionnaire that captured use information for ceftiofur and other antimicrobials such as gentamicin (an aminoglycoside antimicrobial drug approved for use in poultry), was administered, and a site inspection was conducted at each hatchery. Data collected included demographic information, current and past ceftiofur and gentamicin usage, routes of administration, doses administered, number of chicks or poults produced at the facility and the proportion of chicks or poults treated with the antimicrobial drug.

Biosecurity suits, hats and shoe covers were necessary in several hatcheries. In most instances, the hatcheries supplied the inspectors with all of the necessary items that were needed to meet their biosecurity requirements. These ranged from no precautions to shower in-shower out facilities.

On September 11th, when the terrorism attacks occurred, six Division of Epidemiology members were in travel status due to this field assignment. As a consequence, several travel itineraries were affected. This disruption necessitated extension of the assignment beyond the FY01 deadline for completion.

Generally, interviewees from the various hatcheries were very cooperative and provided all of the information that was requested. Some hatcheries were not inspected for various reasons. In some instances, the hatcheries were no longer operational. In one instance, the hatchery was at a university research facility which only raised chicks for research purposes. When possible, alternate hatcheries in the area were identified. A total of 27 commercial hatcheries (22 chicken, 4 turkey, 1 combination) were actually inspected. The data is currently being compiled and analyzed.

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Dr. Silvers is a Veterinary Medical Officer in CVM's Division of Epidemiology. Dr. Spires is an Epidemiologist in CVM's Division of Epidemiology.

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CVM SCIENTISTS ATTEND CONFERENCE ON TRANSGENIC ANIMALS

by Wendelyn Warren, Ph.D. and Kevin Greenlees, Ph.D., DABT

Seven scientists from the Office of New Animal Drug Evaluation and the Office of Surveillance and Compliance attended the Transgenic Animal Research Conference III. The conference was held from September 9 through September 13, 2001 at the Granlibakken Conference Center in Tahoe City, California and was hosted by the University of California at Davis. This was the third in a series of conferences since 1997 that uniquely focuses on genetic engineering in animal species used in agriculture. It was an international meeting intended to bring together researchers from the leading laboratories doing cutting edge research and development with transgenic animals.

The CVM attendees are all part of the Animal Biotechnology Working Group or the Biotechnology Process Group. These groups identify and resolve regulatory policy and scientific issues regarding transgenic animals. The presentations addressed cutting-edge methodology, technical improvements, and current progress towards producing transgenic animals for medical, agricultural, and even industrial applications. Information was provided on basic and applied research through presentations, posters, and informal discussions. CVM scientists were very interested in understanding the advances in genetic engineering and how they may impact considerations of safety and effectiveness, particularly in food animals.

The field of transgenic animal research is rapidly evolving towards practical applications for this technology. Presentations ranged from discussion on how to spin spider silk produced in the mammary gland of

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CVM SCIENTISTS ATTEND CONFERENCE ON TRANSGENIC ANIMALS (Continued)

bioengineered goats to pharmaceutical production in the semen of transgenic pigs, to the production of low phosphorus manure in bioengineered pigs. Each of these very different applications of bioengineering technology share the key step of altering the structure and function of the bioengineered animal. Information about this conference is available through the University of California at Davis web site at http://www.biotech.ucdavis.edu/events/events.htm.

Altering the structure and function of an animal through the insertion of the transgenic material, and in some cases, the resulting expression product are considered to be subject to FDA's regulatory authority likely to require the submission of a new animal drug application to the Center for Veterinary Medicine (see Office of Science and Technology Policy, Center for Environmental Quality Case Studies of Environmental Regulation for Biotechnology, http://www.ostp.gov/html/012201.html). Other FDA Centers may have a role in the regulation of this new technology. The FDA's Center for Biologics, for example, regulates products such as human serum albumin or insulin intended for use in human medicine and harvested from the milk, semen, or other tissue of the bioengineered animal.

Because of the small size of the conference, the nature of the setting, and the collegial atmosphere some of the most important stakeholder outreach occurred over meals and coffee breaks. CVM scientists discussed the INAD and NADA process with sponsors and potential sponsors in this informal setting. There was also an opportunity for candid discussions with regulatory scientists from Health Canada and the Canadian Food Inspection Service. The conference allowed the CVM scientists to expand their breadth of knowledge in this fast-growing field and to interact with potential stakeholders and other government's agencies as the tools of genetic engineering find their way into commercial applications.

The 2001 Transgenic Animal Conference was impacted by the terrorist attacks on September 11, 2001. The shock and grief caused by these attacks was apparent in the discussions among the participants of the conference. Many attendees experienced considerable hardships in returning home. Travel arrangements were cancelled, rescheduled, and rescheduled again as airports struggled to cope with the events. Although thoughts were with all those who have been affected by this tragedy, it was clear that the conference solidified into a community of scientists that ignored national boundaries and brought together the individuals from academia, industry, and government. We thank the conference organizers and the Granlibakken Conference Center for their gracious understanding and support in a very difficult time. We would also like to acknowledge the remarkable support and solidarity expressed by the international attendees.

Dr. Warren is a Pharmacologist in the Residue Chemistry Team in CVM's Office of New Animal Drug Evaluation (ONADE). Dr. Greenlees is a Toxicologist in the Toxicology Team in ONADE.

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DRAFT GUIDANCE ON PHARMACOVIGILANCE OF VETERINARY MEDICAL PRODUCTS AVAILABLE FOR COMMENT

The Food and Drug Administration (FDA) is announcing the availability of a draft guidance for industry (#142) entitled "Pharmacovigilance of Veterinary Medicinal Products: Management of Periodic Summary Update Reports (PSUs)." This draft guidance has been developed by the International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products (VICH). It is intended to describe the reporting system for identification of possible adverse events following the use of marketed veterinary medicinal products submitted to the European Union, Japan, and the United States.

Draft guidance #142 is available on the FDA/Center for Veterinary Medicine (CVM) Home Page on the Internet at: *http://www.fda.gov/cvm/guidance/published.htm#documents*. Single copies of the guidance may be obtained by writing to the *FDA Veterinarian*. Please send one self-addressed adhesive label to assist in processing your request.

Written or electronic comments on this draft guidance should be submitted by January 14, 2002, to ensure their adequate consideration in preparation of the final document. General comments on Agency guidance documents are welcome at any time. Submit written comments to the Dockets Management Branch (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Room 1061, Rockville, MD 20852. Electronic comments should be submitted to: *http://www.accessdata.fda.gov/scripts/oc/dockets/commentdocket.cfm*. Comments should be identified with the full title of the draft guidance and Docket number 01D-0501.

Additional information about this draft guidance document may be found in the December 13, 2001, *Federal Register* (*http://www.fda.gov/OHRMS/DOCKETS/98fr/121301b.htm*), and from Dr. William C. Keller, Center for Veterinary Medicine (HFV-210), Food and Drug Administration, 7500 Standish Place, Rockville, MD 20855, 301-827-6642, e-mail: *wkeller@cvm.fda.gov <mailto:wkeller@cvm.fda.gov>*.

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CVM ESTABLISHES NEW PROJECT MANAGEMENT STAFF

by Madeline Van Hoose

Goal II of the Center for Veterinary Medicine Strategic Plan states that "We will improve and bring discipline to and through our business practices by having . . . created a Center level project management function." To implement this goal, CVM has created a new Project Management Staff at the Center level, under the direction of the Deputy Center Director, Dr. Linda Tollefson. The new Project Management Staff will develop and implement project management processes and methodologies to bring discipline to the way the Center manages complex projects, and provide the support and training necessary to facilitate its effective application across the Center.

As Director of the new Project Management Staff, I will be holding meetings throughout the Center over the next few months to describe the functions and terminology of project management as a discipline, and to share the Project Management Staff Strategic Plan. I look forward to getting to know each staff member and learning more about their views of the critical project management needs of the various components of CVM.

The vision of the new staff is to establish project management in CVM as a culture and way of doing business that adds value at all levels of the organization. The Project Management Staff Strategic Plan outlines the goals and strategies for accomplishing this and its Implementation Plan creates the roadmap for their realization. Included in that plan are goals and strategies that will ultimately reach out to all of CVM.

Almost anyone, when asked, can give his or her own version of what project management means to them. But for starters, a working definition of team-based project management can be stated as the process of planning, focusing, coordinating, and communicating the activities of a project team to:

- Establish and manage a project plan that is agreed to by all project team members and the organizations they represent
- Facilitate priority setting for project objectives and tasks
- Facilitate the work of the project team in accomplishing the project goals and objectives
- Identify problems and issues early in the project
- Identify project resource requirements and conflicts early in the project
- Facilitate decision-making and problem-solving by the project team
- Improve coordination and communication among the organizations represented by the project team members
- Improve communication with principals outside the project team
- Provide project status information to senior managers for decision-making

One of the goals of the Project Management Staff is to create consistency across CVM in the way we approach and implement project management. This will be a long-term effort that involves terminology, methodology and process development, standards and metrics development, mentoring, training, and a lot of piloting on real projects.

Our first pilot project for application of team-based project management is the development of the Antimicrobial Resistance Guidance For Industry. I will be working with Dr. Bill Flynn, the Team Leader, Mrs. Carole Andres, the Project Manager, and all of the team members of the Antimicrobial Resistance Guidance Group (ARGG) (Ms. Mary Bartholomew, Dr. Kevin Greenlees, Ms. Aleta Sindelar, Dr. Charlotte Spires, and Dr. David White), to apply the principles and tools of project management to this development effort. This project is very complex and critically important to the Center. It is an ideal example where project management can help achieve the goals of the project and meet several critical and very tight deadlines.

I see the initial benefits of a CVM Project Management Staff as more effective project management for larger, cross-functional CVM projects, a common project management vocabulary, a project management information system, well-defined and repeatable project management processes, and more readily available project management tools, mentoring, and training. Over the longer term, this will result in alignment of projects to the CVM Strategic Plan, a culture of collaboration and accountability, leveraging of knowledge across the Center, and increased internal and external stakeholder satisfaction. At a team level, the benefits include expedited achievement of project team goals and deliverables, empowerment of project team members through individual accountability, and an enhanced framework for critical decision-making.

The CVM Project Management Staff will be adding another staff member to its ranks this year. In addition, short-term details will be established for project managers and project coordinators to participate as specific projects arise. Not only will this help to incorporate project management tools and techniques into organizations that allow these detailees to participate, but the knowledge and skills they learn can be applied to any project—large, small, complex, or simple. Mastering these skills will open up new opportunities for individuals to apply them. A CVM Project Management Team will also be established as a less formal structure to allow individuals from throughout CVM to participate and learn about what project management is and how it can help in their own organizations.

Madeline Van Hoose is Director of CVM's Project Management Staff.

□

by Karen A. Kandra

The following firms/individuals received warning letters for offering animals for slaughter that contained illegal drug residues:

- Mike Bidart, Owner, Loyola Dairy, Chino, CA
- Charles F. Woodward, DVM, Concho Dairy Consulting, Onalaska, WI
- Shaye G. Pope, President, Pope Dairy Enterprises, Stetsonville, WI
- Anthony R. Dinitto, Rome, NY
- Randy J. Winner, Four Star Dairy, Yorkshire, OH

These violations involved illegal residues of penicillin in a dairy cow; extra-label treatment resulting in flunixin meglumine residues in a cow; illegal residues of gentamicin in a cow; illegal residues of sulfadimethoxine in two cows; and, neomycin in a cow.

A warning letter was issued to the following firms for violations related to 21 CFR Part 589.2000 – Animal Proteins Prohibited in Ruminant Feed. This regulation is intended to prevent the establishment and amplification of Bovine Spongiform Encephalopathy (BSE) through feed.

- Kenneth Roy Tufly, Owner, Dixon Feeds, Inc., Dixon, MT
- Gregory M. Sostak, President, Finlayson Ag Center, Finlayson, MN

Violations included failure to separate the receipt, processing, and storage of the product containing prohibited material from non-prohibited material; failure to establish a written system to avoid commingling and cross-contamination of common equipment; failure to maintain records sufficient to track the materials throughout the receipt, processing, and distribution of products; and, failure to label products with the required cautionary statement "Do Not Feed to Cattle or Other Ruminants." For example, the common scoop used to transfer prohibited material from 50-pound bags to smaller brown bags is not cleaned between prohibited and non-prohibited material uses. Also, opened bags of prohibited materials were reported to be stored next to other open feed ingredient bags.

Ray Winn, President, Winn, Inc., Smithfield, UT, received a warning letter for manufacturing a free choice feed containing the Category II Type A Medicated Article, Lasalocid/Bovatec 68, for use in cattle and sheep. This firm failed to have an approved formula, and failed to possess a valid FDA Medicated Feed Mill License. In addition, the firm's product labels contained numerous errors.

Mr. LaMar G. Clements, President, Walton Feeds West, Inc., Cache Junction, UT, received a warning letter for selling and shipping a Type A Medicated Article (Lasalocid/Bovatec 68) to the above firm which does not possess a valid FDA Medicated Feed Mill License. As a manufacturer of materials intended for animal feed use, feed mills are responsible for assuring that the overall operation and the products manufactured and distributed are in compliance with the law. This includes assuring that each site where the firm handles Type A Medicated Articles adheres to the requirement not to ship to unlicensed or unauthorized parties.

Mr. Louis A. Rodriguez, Vice President, Pet Magic, Inc., Detroit, MI, received a warning letter for releasing pig ear dog treats that had been detained by the Detroit District Office into commerce without the proper release from the FDA. The samples tested positive for *Salmonella*. □

NEW DOSAGE FORM DRUG APPROVED FOR HORSES

FDA recently announced the first metered-dose inhaler approved for use in horses. The active ingredient, albuterol, is a new chemical entity never before approved for veterinary use.

Albuterol sulfate is administered to horses intranasally via a metered-dose inhaler for the immediate relief of bronchospasm and bronchoconstriction associated with reversible airway obstruction [also known as chronic obstructive pulmonary disease (COPD)] in horses.

Marketed under the trade name, Torpex, and sponsored by Boehringer Ingelheim VetMedica, Inc., the drug is supplied in a pressurized aluminum canister contained within an actuator system equipped with a detachable nasal delivery bulb. The nasal bulb is inserted into the horse's nostril and when the horse inhales, the device is actuated providing a puff of aerosolized albuterol which is delivered to the horse's lungs.

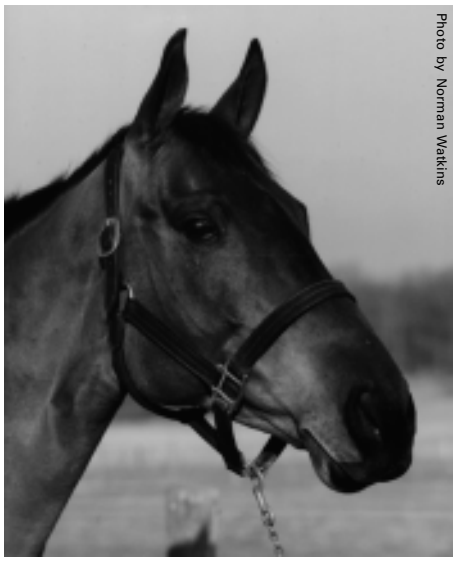

Photo by Norman Watkins

This aerosol dosage provides an alternative to the approved drug, clenbuterol, an oral syrup. Aerosol albuterol provides relief to affected horses within minutes allowing the horse to breath easier. Typical adverse reactions are transient sweating, muscle tremors, or excitement. □

FDA INVESTIGATOR ATTENDS MILK SEMINAR

On November 7, 2001, Investigator Karen Robles from FDA's San Francisco District Office presented the FDA's Illegal Drug Residues in Meat & Poultry Program at the Pacific/Southwest Region Milk Seminar held in Reno, Nevada. Opening remarks were provided by Brenda Holman, FDA's Pacific Regional Director. There were representatives from the dairy regulatory programs in 22 States, as well as 130 attendees at the tissue residue presentation, including veterinarians, dairy producers, and State regulatory officials. Topics included program objectives, tissue residue follow-up inspections, and the most common causes of illegal drug residues. Materials provided included *FDA and the Veterinarian* booklets and press releases covering recent injunction cases.

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SUPPLEMENTAL ABBREVIATED NEW ANIMAL DRUG APPROVALS

Company	*Generic and (Brand) Names*	*Indications*	*Routes/Remarks*
Bimeda, Inc. (ANADA 200-144)	Oxytetracycline hydrochloride (Tetroxy)	Turkeys, swine. For the treatment of various bacterial diseases.	**ORAL**—The ANADA provides for a zero-day withdrawal time for use of oxytetracycline hydrochloride in the drinking water of turkeys and swine. *Federal Register* 11/26/01

Photo by Keith Weller

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ABBREVIATED NEW ANIMAL DRUG APPROVALS

Company	*Generic and (Brand) Names*	*Indications*	*Routes/Remarks*
First Priority, Inc. (ANADA 200-321)	Ivermectin (Primectin™ Equine Oral Liquid) Rx	Horses. For treatment and control of various species of internal and cutaneous parasites.	**ORAL**—The ANADA is a generic copy of Merial Ltd's Eqvalan® oral liquid for horses approved as NADA 140-439. *Federal Register* 12/05/01

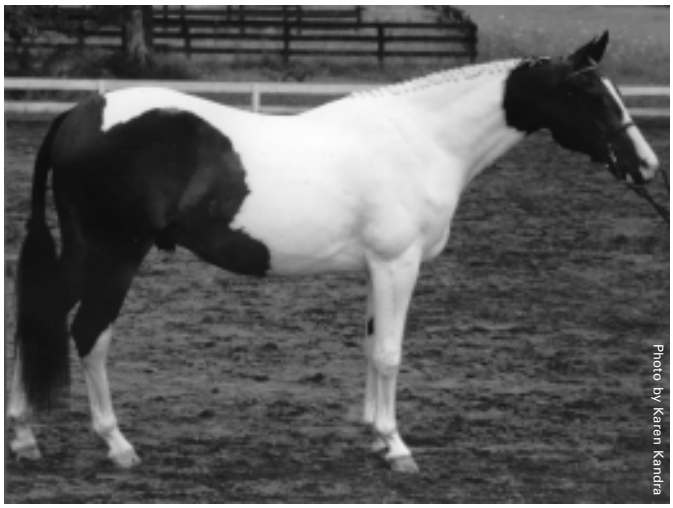

Photo by Karen Kandra

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ABBREVIATED NEW ANIMAL DRUG APPROVALS (Continued)

Company	*Generic and (Brand) Names*	*Indications*	*Routes/Remarks*
Vibrac AH, Inc. (ANADA 200-318)	Ivermectin (Virbamec Pour-On)	Cattle. For treatment and control of various species of external and internal parasites.	**TOPICAL**—The ANADA is a generic copy of Merial Ltd's Ivomec® Pour-On for Cattle approved as NADA 140-841. *Federal Register* 12/05/01 □

Photo by Karen Kandra

SUPPLEMENTAL NEW ANIMAL DRUG APPROVALS

Company	*Generic and (Brand) Names*	*Indications*	*Routes/Remarks*
Schering-Plough Animal Health Corp. (NADA140-951)	Diclazuril (Clinacox™)	Turkeys. For prevention of coccidiosis.	**MEDICATED FEED**—The supplemental NADA provides for use of the approved diclazuril Type A medicated article to make Type B and Type C medicated turkey feeds used for prevention of coccidiosis caused by *Eimeria adenoeides*, *E. gallopavonis*, and *E. melagrimitis*. Also, the NADA establishes tolerances for diclazuril residues in turkey liver at 3 ppm, muscle at 0.5 ppm, and skin with adherent fat at 1 ppm. *Federal Register* 12/04/01

Photo by Scott Bauer

(Continued, next page)

Company	*Generic and (Brand) Names*	*Indications*	*Routes/Remarks*
Pfizer, Inc. (NADA 141-053)	Carprofen (Rimadyl® Caplets) Rx	Dogs. For the relief of pain and inflammation associated with osteoarthritis.	**ORAL**—The supplement provides for a once daily, 2 mg/lb dosage of carprofen, by oral caplet. *Federal Register* 12/05/01


Photo by Karen Kandra

MoorMan's, Inc. (NADA 115-581)	Monensin (MoorMan's Mintrate Blonde Block RU and MoorMan's Mintrate Red Block RU)	Cattle. For prevention and control of coccidiosis.	**MEDICATED FEED**—The supplement provides for use of approved monensin Type A medicated articles to make free-choice, medicated feed blocks used for prevention and control of coccidiosis caused by *Eimeria bovis* and *E. zuernii* in pasture cattle. *Federal Register* 12/07/01


Photo by Karen Kandra

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