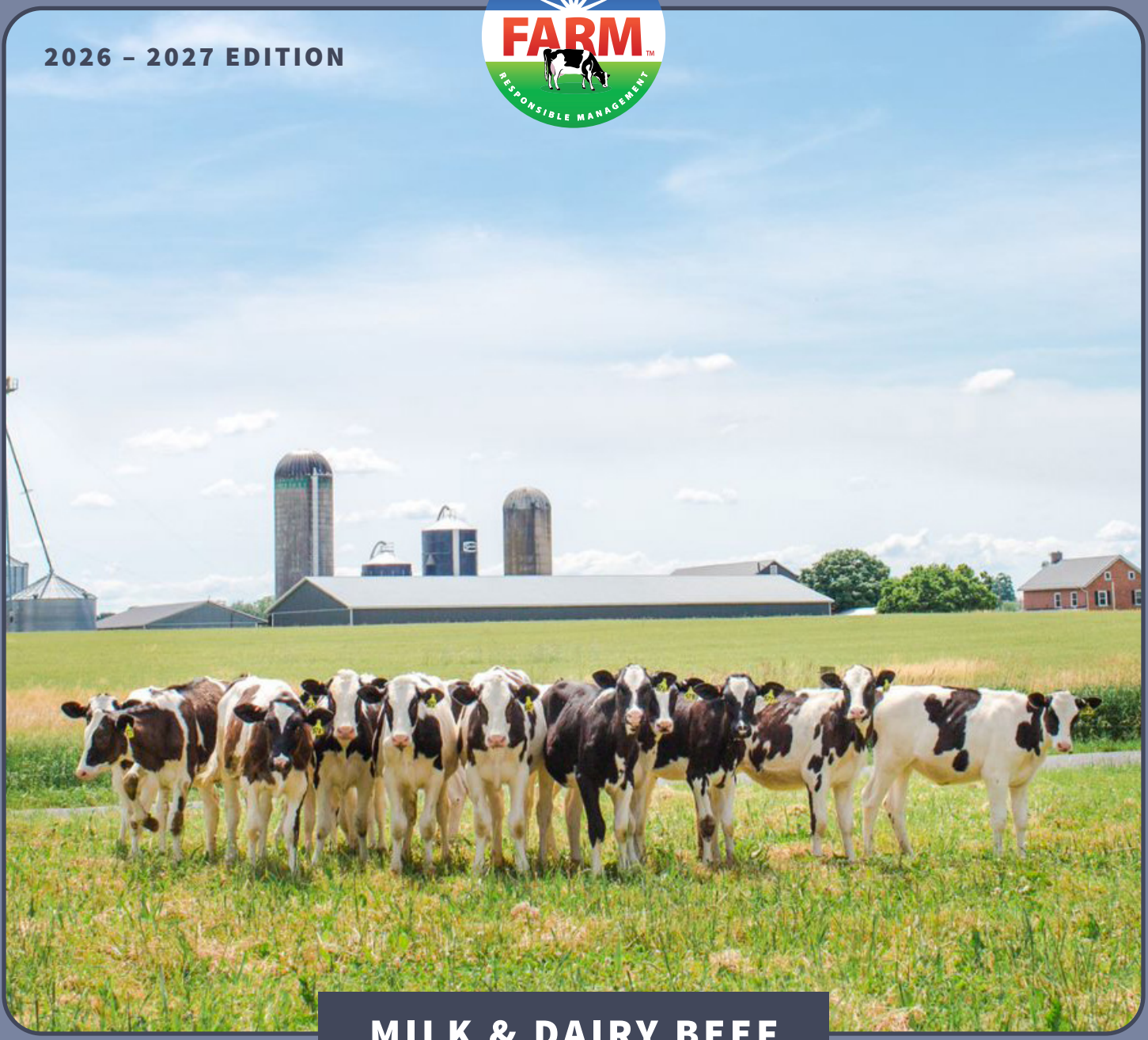
2026 – 2027 EDITION



MILK & DAIRY BEEF

Drug Residue Prevention

REFERENCE MANUAL

MILK & DAIRY BEEF

Drug Residue Prevention Reference Manual

2026-2027

This manual is not a legal document and is intended for educational purposes only. Dairy farmers are individually responsible for determining and complying with all requirements of local, state, and federal laws and regulations regarding animal care.

Recent Regulatory Change

FDA'S GUIDANCE FOR INDUSTRY (GFI) #273

The Food and Drug Administration's Guidance for Industry (GFI) #273, finalized and announced in February 2026, recommends that sponsors of certain medically important antimicrobial drugs administered in or on the feed of food-producing animals voluntarily revise product labeling to include defined durations of use when those durations are currently unspecified. The guidance applies only to feed-administered antimicrobials important to human medicine and targets legacy approvals — many issued decades ago — that allow antimicrobials to be fed for indefinite periods, particularly for disease prevention. To promote judicious use and reduce antimicrobial resistance, FDA recommends labeling that specifies a typical duration range, bounded by a maximum permitted duration, giving veterinarians clear guidance while retaining clinical flexibility. Although compliance is voluntary, FDA expects broad participation and anticipates that sponsors can submit and obtain approval for revised labeling for affected products — more than 100 drugs — within approximately three years, consistent with FDA's broader antimicrobial stewardship strategy.

Source: https://www.fda.gov/media/191092/download

NEW WORLD SCREWWORM

FDA conditional approval, overseen by the Center for Veterinary Medicine (CVM), allows an animal drug to be legally marketed when it addresses a serious or life-threatening disease or an unmet animal health need, such as New World screwworm (NWS), and when generating full effectiveness data would be complex or difficult. Under this pathway, the sponsor must fully demonstrate target animal safety, human food safety (including residues and withdrawal periods), manufacturing quality, and labeling, but only a reasonable expectation of effectiveness is required initially rather than substantial evidence. Conditional approvals are granted for one year at a time and may be renewed annually for up to five years while the sponsor completes the studies needed for full approval. Drugs approved through this pathway are labeled with a "-CA" suffix.

An Emergency Use Authorization (EUA) is a temporary, emergency pathway that FDA may use after the Secretary of Health and Human Services declares a public health emergency or significant potential emergency, as occurred for New World screwworm beginning in 2025. Under an EUA, FDA must determine that, based on the available scientific evidence, it is reasonable to believe the product may be effective and that its known and potential benefits outweigh known and potential risks. EUAs are issued with legally binding conditions of use, including species, dosing, monitoring, recordkeeping, and traceability requirements, and they remain in effect only until revoked or until the emergency declaration is terminated. EUA products are not considered fully or conditionally approved and may only be used within the specific limits described in the authorization.

Extra-label use of FDA-approved animal drugs is limited to drugs with a new animal drug approval, which means it does not include conditional approvals or products with an emergency use authorization. A small number of animal drugs have full FDA approval for non-NWS indications and conditional approval or an EUA for NWS. These animal drugs can be used in an extra-label manner because they also have a full approval.

FDA APPROVED/AUTHORIZED DRUGS FOR NEW WORLD SCREWWORM IN CATTLE (AS OF MAY 2026)

DRUG NAME	ACTIVE INGREDIENT	FDA STATUS	INDICATION FOR NWS	KEY NOTES
Dectomax®/ Dectomax-CA1®	Doramectin injection	Emergency Use Authorization for dairy cattle, OTC	Prevention and treatment of NWS myiasis; prevention of reinfestation for up to 21 days	Same active ingredient and dose as fully approved Dectomax® for other parasites; 35 day slaughter withdrawal; Milk taken from lactating dairy cows, dry dairy cows and replacement dairy heifers during treatment and for 468 hours (19.5 days) after treatment must not be used for human consumption. A withdrawal period has not been established for this product in pre-ruminating calves. WDo not use in calves to be processed for veal.
Exzolt™ Cattle CA1	Fluralaner topical solution	Conditional approval, Rx	Prevention and treatment of NWS myiasis; also treatment/control of cattle fever tick	Isoxazoline class; systemic activity; approved for beef cattle ≥2 months and replacement dairy heifers <20 months. Cattle must not be slaughtered for human consumption within 98 days of treatment. If cattle are continuously exposed to temperatures at or above 60° F after product administration, then cattle may be slaughtered for human consumption 44 days after treatment. Do not use in lactating dairy cattle, dairy calves, veal calves, or bulls over one year of age that are intended for breeding.
Ivomec Injectable	Ivermectin injectable solution	Emergency Use Authorization, OTC	Prevention when administered within 24 hours of birth, at the time of castration, or at the appearance of wound.	Temporary authorization, same active ingredient and dose as fully approved Ivomec for other parasites; slaughter withdrawal period 35 days. Not for use in female dairy cattle producing milk for human consumption and calves that will be processed for veal.
F10 Antiseptic Wound Spray with Insecticide*	benzalkonium chloride, polyhexanide, and cypermethrin topical solution	Emergency Use Authorization, OTC	For the prevention and treatment of infestations caused by New World screwworm (Cochliomyia hominivorax) larvae (myiasis) in cattle.	Cattle, goats, and sheep must not be slaughtered for human consumption within 30 days of treatment. Milk taken from cows, goats, or sheep during treatment and for 10 days after treatment must not be used for human consumption. A withdrawal period has not been established for this product in pre-ruminating calves. Treated calves and calves born to treated cows must not be processed for veal.
F10 Antiseptic Barrier Ointment with Insecticide*	benzalkonium chloride, polyhexanide and cypermethrin topical ointment	Emergency Use Authorization, OTC	For the prevention and treatment of infestations caused by New World screwworm (Cochliomyia hominivorax) larvae (myiasis) in cattle.	Cattle, goats, and sheep must not be slaughtered for human consumption within 30 days of treatment. Milk taken from cows, goats, or sheep during treatment and for 10 days after treatment must not be used for human consumption. A withdrawal period has not been established for this product in pre-ruminating calves. Treated calves and calves born to treated cows must not be processed for veal.

Source: https://www.fda.gov/animal-veterinary/safety-health/animal-drugs-new-world-screwworm
https://www.fda.gov/animal-veterinary/safety-health/new-world-screwworm-information-veterinarians

NOTES * Extralabel use of this animal drug is not permitted.

DISCLAIMER

National Milk Producers Federation (NMPF) does not endorse any of the veterinary drugs or tests identified on the lists in this manual. The lists of veterinary drugs and tests are provided only to inform producers and veterinarians what products may be available, and the producer and veterinarian are responsible for determining whether to use any of the veterinary drugs or tests. All information regarding the veterinary drugs or tests was obtained from the products' manufacturers or sponsors, and NMPF has made no further attempt to validate or corroborate any of that information. NMPF urges producers to consult with their veterinarians before using any veterinary drug or test, including any of the products identified on the lists in this manual. In the event that there might be any injury, damage, loss or penalty that results from the use of these products, neither the manufacturer of the product nor the producer using the product shall be responsible. NMPF is not responsible for, and shall have no liability for, any injury, damage, loss or penalty.

NMPF
NATIONAL MILK
PRODUCERS FEDERATION

DMI DAIRY MANAGEMENT INC.™

Foreword

The goal of our nation's dairy farmers is to produce the best tasting, safest, and most wholesome milk possible. Our consumers demand the best from us, and we strive, through continuous improvement, to not only meet their needs but also exceed their expectations every day.

Day in and day out, dairy farmers provide the best in animal husbandry. As part of continuous improvement, we evaluate our best management practices and disease prevention protocols to keep our animals healthy and comfortable. There are occasions when animals may become sick or injured and need antibiotic therapy to overcome that challenge. As dairy farmers, we strategically and prudently use antibiotic therapy to help an individual animal threatened with a disease or injury. We take this responsibility of prudent antibiotic use seriously and take precautions to ensure that milk or meat from antibiotic-treated animals does not enter the food supply.

The avoidance of milk and meat residues takes an on-farm team effort that begins with the Veterinarian-Client-Patient Relationship (VCPR). Dairy farm owners, managers, and employees work with their veterinarians to develop treatment protocols that ensure that medications are used correctly. Once a decision is made to use medications, protocols, as part of a comprehensive herd health plan, are in place to guide employees on the safest way to handle the animal to prevent an inadvertent milk or meat residue from occurring. Proper identification of treated animals and accurate recording of drug use are essential to prevent residues.

The U.S. dairy industry has long been committed to antibiotic stewardship and appropriate use of all medications. This year's revised manual is a quick resource to review those drugs approved for dairy animals and can also be used as an educational tool and resource for farm managers and employees to develop on-farm best management practices. I encourage all dairy farmers to sit down with their veterinarians and employees to review this manual as you will find the information useful, practical, and easily applied to your farm.

KAREN JORDAN, DVM

Chair, National Milk Producers Federation Animal Health and Wellbeing Committee
Brush Creek Farm - Siler City, NC

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INTRODUCTION

The Dairy Industry's Commitment

The dairy industry is committed to producing the highest quality, safe, abundant, and affordable milk and dairy beef. Healthy animals help make for safe food, and disease prevention is the key to keeping them healthy. When dairy animals get sick or injured and therapy is necessary, producers and veterinarians utilize medications prudently. All medications must be used appropriately under veterinary guidance to prevent residues from occurring in milk and dairy beef. The marketing of milk or dairy beef with drug residues, even unintentionally, is illegal and can result in financial and criminal penalties.

Antimicrobial Stewardship

Antimicrobial stewardship extends across all livestock production and includes the use of medications in companion animals, humans, and some types of crop production systems. Antimicrobial resistance is one of the world's most pressing public health concerns. When animals or humans are given antimicrobials, resistant bacterial subpopulations can thrive and possibly lead to less effective drugs. As of April 30, 2021, the Food and Drug Administration Center for Veterinary Medicine (FDA CVM) has committed to antimicrobial stewardship in animals through the following key initiatives in veterinary settings:

1. Align antimicrobial drug products with the principles of antimicrobial stewardship.
2. Support efforts to foster stewardship of antimicrobials.
3. Assess the impact of strategies intended to curb the emergence of antimicrobial resistance associated with the use of antimicrobial drugs.

You can find more information about these principles on the FDA's website.

Veterinary Organizations' Position on Antibiotic Use for Treatment, Control, and Prevention

THE AMERICAN ASSOCIATION OF BOVINE PRACTITIONERS (AABP)

Antimicrobial stewardship is the commitment to reducing the need for antimicrobial drugs by preventing infectious disease in cattle, and when antimicrobial drugs are needed, a commitment that antimicrobials are used appropriately to optimize health and minimize selection for antimicrobial resistance.

The AABP recognizes that antimicrobials remain necessary for animal health to treat, prevent, and control infectious disease in beef and dairy cattle and emphasizes that preventive health programs can reduce the occurrence of disease and therefore the need for antimicrobials.

REFERENCES

Definition of "VCPR," American Veterinary Medical Association (AVMA). avma.org/resources-tools/pet-owners/petcare/veterinarian-client-patient-relationship-vcpr

Judicious therapeutic use of antimicrobials. American Veterinary Medical Association. avma.org/resources-tools/avma-policies/judicious-therapeutic-use-antimicrobials

AVMA definitions of antimicrobial use for treatment, control, and prevention. American Veterinary Medical Association. avma.org/resources-tools/avma-policies/avma-definitions-antimicrobial-use-treatment-control-and-prevention

aabp.org/Resources/AABP_Guidelines/AABP-AVC_Joint_Judicious_Therapeutic_Use_of_Antimicrobials_Guideline-2019.pdf

aabp.org/resources/AABP_Guidelines/AntimicrobialStewardship0322Final.pdf

THE AMERICAN ASSOCIATION OF VETERINARY MEDICINE (AVMA)

AVMA believes antimicrobial stewardship is achievable whether the intent of antimicrobial use is for prevention, control, or treatment. AVMA provides the following definitions for treatment, prevention, and control in the context of antimicrobial use in individual animals or populations of animals.

Definitions

ANTIMICROBIAL PREVENTION OF DISEASE (SYNONYM: PROPHYLAXIS)

1. Prevention is the administration of an antimicrobial to an individual animal to mitigate the risk for acquiring disease or infection that is anticipated based on history, clinical judgement, or epidemiological knowledge.

2. On a population basis, prevention is the administration of an antimicrobial to a group of animals, none of which have evidence of disease or infection, when transmission of existing undiagnosed infections, or the introduction of pathogens, is anticipated based on history, clinical judgement, or epidemiological knowledge.

ANTIMICROBIAL CONTROL OF DISEASE (SYNONYM: METAPHYLAXIS)

1. Control is the administration of an antimicrobial to an individual animal with a subclinical infection to reduce the risk of the infection becoming clinically apparent, spreading to other tissues or organs or being transmitted to other individuals.

2. On a population basis, control is the use of antimicrobials to reduce the incidence of infectious disease in a group of animals that already has some individuals with evidence of infectious disease or evidence of infection.

ANTIMICROBIAL TREATMENT OF DISEASE

1. Treatment is the administration of an antimicrobial as a remedy for an individual animal with evidence of infectious disease.

2. On a population basis, treatment is the administration of an antimicrobial to those animals within the group with evidence of infectious disease.

2

RESIDUE PREVENTION BEST PRACTICES

Causes of Antimicrobial Residues in Milk and Meat

Drug residues can be avoided with the implementation of a well-planned drug use program. Milk and meat residues can result from many on-farm situations.

REASONS (INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING)

- Lack of a valid Veterinarian-Client-Patient Relationship (VCPR).
- Failure to keep accurate, adequate, and complete drug use records.
- Failure to follow the manufacturer or veterinarian prescribed label directions for treatment or the appropriate withdrawal time.
- Inadequate identification of all cattle, including bull calves.
- Mistakenly milking a treated cow into the bulk tank or not diverting milk from the bulk tank.
- Drugs with long withdrawal times that pose a higher risk for residues (i.e., treatment of youngstock with gentamycin resulting in a residue as an older animal).
- Use of medicated milk replacers for calves sold as veal.
- The use of prohibited drugs or extra-label use of aminoglycosides (i.e., gentamicin) in cattle. The AABP and the Academy of Veterinary Consultants (AVC) strongly discourage any use of aminoglycosides for the treatment of disease in all classes of cattle because of the significant risk.
- Use of sulfonamides (i.e., Sustain III Calf Bolus) other than sulfadimethoxine (i.e., ALBON® Bolus) in lactating dairy cattle. Extra-label use of sulfadimethoxine in lactating dairy cattle is prohibited by FDA regulation.
- Reduced animal liver and kidney function, particularly in unhealthy animals where drug metabolism may be compromised, may result in poorly defined and significantly extended drug withholding times.
- Failure to extend the withdrawal period when a drug, not approved for use in lactating dairy animals, is used in an extra-label fashion.
- The use of multiple drugs requiring withholding without seeking veterinary guidance on appropriate extended withholding periods.

Steps to Prevent Drug Residues

Dairy farmers realize the importance of reducing the risk of creating drug residues in milk and dairy beef. They can take the following steps to mitigate or lessen the chances of drug residues:

STEP 1	Establish a valid VCPR to ensure proper diagnosis and choice of therapy. The agreement should be reviewed annually with a Veterinarian of Record (VOR) who makes routine visits to the farm and is available for follow-up consultation in the event of an adverse drug event, including therapy failure.
STEP 2	Follow the treatment protocols as prescribed by the VOR. If the animal is showing signs of an illness for which there is no protocol, contact the VOR for guidance.
STEP 3	Work with the VOR to create treatment protocols and for follow-up consultations and visits.
STEP 4	Keep accurate records of all medication use and identify all treated animals. The VOR should review the treatment records regularly.
STEP 5	Implement a preventive herd health plan to reduce the incidence of disease.
STEP 6	Maintain milk quality and implement an effective mastitis management program to reduce the need for medications.
STEP 7	Implement family and non-family employee training and awareness of proper animal drug use. Identify which family and non-family employees have access to medications and the authorization to treat animals.
STEP 8	Use drugs approved for specific disease indications according to label directions and withdrawal periods. If extra-label drug use (EDLU) is indicated by a veterinarian's prescription, that veterinarian must establish and document appropriate withdrawal periods.
STEP 9	Only use drugs that are approved for use in the specific class of cattle for the conditions to be treated (e.g., lactating, non-lactating, veal).
STEP 10	Segregate and milk treated animals after all non-treated animals or in a separate facility to ensure that milk is not accidentally commingled.

STEP 11 Use drug residue screening tests specific to the drug used before marketing milk or meat from treated animals. Ensure employee understanding of the test being used. Most tests are developed for use in bulk milk and are not designed for application with individual animals. Live animal tests of blood or urine do not detect residues at the postmortem target tissue level.

STEP 12 If in doubt about residue status, do not market milk or cull treated animals. Seek input from your veterinarian and/or milk marketer.

Food Animal Residue Avoidance Databank (FARAD)

FARAD is a university-based national program that serves as the primary source for scientifically based recommendations regarding safe withdrawal intervals of drugs and chemicals in food-producing animals. As such, FARAD is a key resource for protection of our nation's food supply, including meat, milk, and eggs, against accidental contamination of animal-derived foods with violative residues of drugs, pesticides or other agents that could compromise food safety.

Modern animal agriculture relies on the use of therapeutic drugs, pesticides, and other agents that improve overall animal health and promote safe, efficient, and humane production practices. Through the assimilation of a comprehensive drug database and the use of state-of-the-art pharmacokinetic modeling, FARAD scientists determine appropriate withdrawal periods for a wide array of chemical entities and provide this information to veterinarians, extension specialists, and livestock producers through a toll-free call center as well as a publicly accessible website (FARMWeb). In addition, FARAD provides rapid response assistance regarding extra-label use of drugs in animal agriculture, and during food contamination emergencies that might arise from accidental exposure to environmental toxins, particularly pesticides, or intentional efforts to contaminate the food supply. Finally, FARAD provides assistance in trade matters related to foreign drug approvals and trains future veterinarians in the principles of residue avoidance.

FARAD is a USDA-funded university-based consortium that is overseen and operated by faculty and staff within the Colleges of Veterinary Medicine at the University of California-Davis, the University of Florida, Kansas State University, North Carolina State University, and Virginia-Maryland College of Veterinary Medicine.

SOURCE: FARAD

3

RECORDKEEPING AND HERD HEALTH PROTOCOLS

Farmers Should Maintain Permanent Treatment Records for All Medications Used

These records must be kept for a **minimum of two years after the treatment date or the animal leaves the farm**. The records system can be written or electronic but must be permanent. Records should be readily retrievable and reviewed regularly by the VOR to ensure compliance with protocols, establish preventive measures when necessary and evaluate the need to alter protocols. The treatment record should contain the following information:

- Date of treatment
- Animal treated identification
- Disease/condition being treated
- Name of treatment used
- Dosage administered
- Route of administration
- Duration of the treatment
- Specified withdrawal times for milk and meat to ensure food safety
- Name of person administering the treatment

WHY KEEP DRUG RECORDS?

- ✓ Prevent an accidental violative residue
- ✓ Ensure effective herd health plan
- ✓ Improve your veterinarian's effectiveness
- ✓ Reduce liability (drug records are required by law)
- ✓ Save money

7-Step Plan for Keeping Effective Records

STEP 1

DEVELOP A RECOMMENDED OR APPROVED DRUG LIST

Work with your VOR to make a complete list of drugs to be used on your dairy. The intent of the drug list is to ***only*** include drugs you use. Make a specific list of drugs you use routinely, and remove any you don't use to eliminate unnecessary risk. Include milk and meat withholding times.

STEP 2

ESTABLISH AN ANIMAL TREATMENT PLAN

When practicing preventive medicine or treating early symptoms of a disease or infection, it is important to be consistent. Establish a treatment plan and protocols for your herd health practices. Review it with your VOR. Treatment plans should be simple to follow and should list:

- Symptoms for the disease
- Medical treatments for the disease (antimicrobials and other treatments)
- Dose, route, and duration of the treatment
- Persons trained and responsible for the treatments and records

Within the treatment plan or in a separate document, it is advised to describe how treated animals are marked or segregated from other animals during their treatment and withholding time.

Any family or non-family employees with treatment responsibilities should be properly trained to:

- Examine animals for symptoms
- Follow the treatment protocol for the disease
- Properly administer the treatment
- Keep appropriate records
- Monitor the animals for the duration of the treatment and withholding period
- Use proper stockmanship/animal handling techniques

Training of family or non-family employees should also be recorded.

STEP 3

ESTABLISH INVENTORY MONITORING

Review drug inventory with your VOR and properly discard the following:

- All expired drugs
- Any drugs no longer used as part of a treatment protocol
- Any drugs not included on your approved drug list

Conduct an inventory of drugs along with your annual review of treatment plans and herd health protocols. Having an inventory will allow you to monitor and have products available on the approved list and treatment plans. Audit the amount purchased versus the amount used as a tracking tool for appropriate use and ensure that family and non-family employees follow treatment plans. Remember to record all products that are damaged, broken, or discarded, and follow proper disposal protocols.

STEP 4

RECORD MEDICATED FEED PURCHASES

Residues can occur from feeding practices in addition to injections or other medical treatments.

Be sure to clean feed equipment between batches, especially when using medicated feeds. Avoid using leftover feed from feeder calves, hogs, etc., for lactating dairy cattle. Feeding medicated milk replacer or waste milk to calves intended for sale as veal can cause violative tissue residues. Records should be kept for all medicated feeds purchased, amounts used, disease treated, and identification of animals treated.

STEP 5

RECORD DRUG PURCHASES

The FDA requires electronic or written records of all drugs used on your dairy, so it is important to promptly record the purchase of drugs and maintain a running inventory.

STEP 6

MAINTAIN PERMANENT DAILY TREATMENT RECORDS

When a drug is used, record its use in a permanent daily treatment record (written or electronic). In hindsight, dairy farmers who have marketed milk or dairy beef containing violative residues state that keeping better treatment records and properly identifying treated animals could have prevented the residue. Develop good habits to monitor your daily treatment records, and record all medications promptly. Remember to have a permanent record of all treatments, including calves, heifers, and dry cows. A treatment record should contain the following information:

- Date of treatment
- Animal treated identification
- Disease/condition being treated
- Name of treatment used
- Dosage administered
- Route of administration
- Duration of the treatment
- Specified withdrawal times for milk and meat to ensure food safety
- Name of person administering the treatment

STEP 7

DISPOSAL

Conduct a periodic review of drugs in storage. Record and discard expired drugs following local, state, and federal guidelines for disposal. By recording daily treatments and the disposal of any discarded drugs, you create a paper trail of all medication used on the farm.

REFERENCES

"Step 7: Disposal" adapted from: Where and How to Dispose of Unused Medicines. U.S. Food & Drug Administration. fda.gov/consumers/consumer-updates/where-and-how-dispose-unused-medicines

Code of Federal Regulations 21 CFR 530.5. Food and Drug Administration. 2020. ecfr.federalregister.gov/current/title-21/chapter-I/subchapter-E/part-530/subpart-A/section-530.5

Herd Health Plan

The dairy industry's commitment to antimicrobial stewardship begins on the farm with coordinated animal health and care programs, including a herd health plan developed in consultation with the VOR that is reviewed annually. Even with the best prevention programs, animals can become sick or injured – prudent and responsible use of antimicrobials and other medications under veterinary supervision may be necessary to improve an animal's health outcome.

AN EFFECTIVE WRITTEN HERD HEALTH PLAN FOCUSES ON:

DISEASE AND INJURY

- Prevention
- Rapid diagnosis
- Necessary treatment

ANIMAL CARETAKERS

- Training with documentation
- Defined expectations and responsibilities

ANNUAL REVIEW OF PLAN WITH THE VOR

- Periodic and timely updates to protocols and treatment plans
- Review of drug records

RECORDKEEPING, PROTOCOL, AND ANTIBIOTIC STEWARDSHIP TEMPLATES

Visit nationaldairyfarm.com for free recordkeeping and drug management record forms and templates.

4

ANIMAL HEALTH PRODUCT ADMINISTRATION

Sites and Techniques

Administering animal health products in the appropriate site on the animal, at the labeled dose, and via the appropriate route indicated on the product label, is important for responsible product use.

Injections should be given in the neck to prevent costly damage to economically important beef cuts, such as the round or chuck. Appropriate administration is particularly important when administering intramuscular (IM) products. It also makes it easier for packers to identify lesions at the plant level, so the affected cuts do not inadvertently end up on a consumer's plate.

Regardless of animal's age, injections should be given in front of the shoulder slope (unless directed otherwise by a veterinarian or per label instruction).

- Injections in the neck prevent costly damage to economically important beef cuts.
- To avoid adverse tissue reactions, inject products in the neck subcutaneous (SQ) whenever possible, or choose products that can be given intravenous (IV), intranasal (IN), or orally.

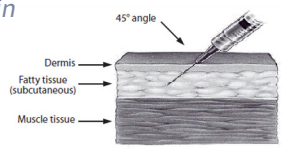
Some animal health products are approved for injection or administration into the ear of cattle. This location is excellent from a quality assurance perspective as ears are removed at harvest and do not enter the food chain. The exact location on the ear depends on the product. For lactating dairy cows, the base of the ear is the approved route. The ear must be very clean and care must be taken to avoid blood vessels. Always read product labels carefully. Withdrawal times may vary depending on type of injection method used and will change if location is off-label.

Types of Injection Administrations:

SQ

Subcutaneous

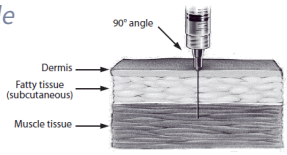
under the skin



IM

Intramuscular

in the muscle



IMM

Intramammary

in the mammary gland and does not use a needle

IV

Intravenous

in the vein

BOE (Figure 4)

Base of ear

under the skin

FIGURE 1

One-Handed Injection Technique

The one-handed technique involves using the injection needle tip to lift the skin after initial skin penetration. After popping through the skin at a 35-45° or flatter angle to the neck, push the plunger to administer the product. The flat angle helps avoid hitting the muscle layer.

Source: National BQA Program

FIGURE 2

Two-Handed Injection Technique

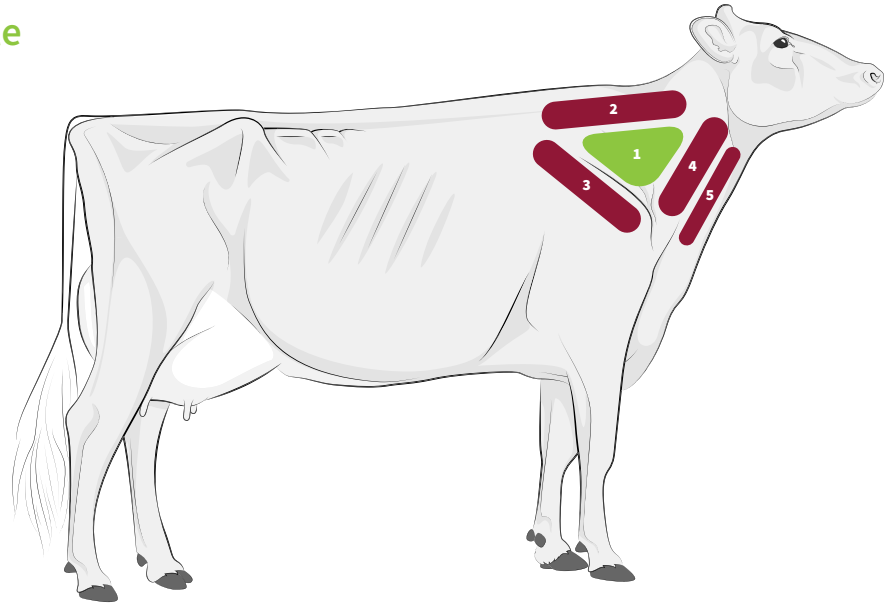
If the two-handed technique can be safely done, use one hand to pull the cattle's skin away from the neck to make a skin tent, and use the other hand to insert the needle under the skin and inject into the pocket created. Be careful not to accidentally inject the tenting hand, which is why animal restraint is important.

Source: National BQA Program

FIGURE 3

Injection Site Triangle

- Upper border is below nuchal ligament (2″ below topline)
- Lower border is above neck vertebrae
- In front of the slope of the shoulder

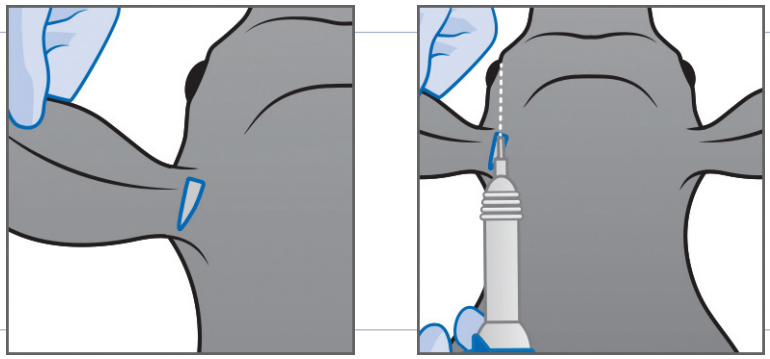


1 Injection Zone 2 Nuchal Ligament 3 Shape of Shoulder 4 Neck Vertebrae 5 Jugular Furrow

FIGURE 4

BOE Injection Zone

Source: Zoetis



	ROUTE OF ADMINISTRATION VIA NEEDLE TOLERANCE								
	SQ (1/2 – 3/4″ Needle)			**IV** (1 1/2″ Needle)			**IM** (1″ needle for heifers, 1 1/2″ needle for adult cows)		
Cattle Weight (lbs.)	<300	300–700	>700	<300	300–700	>700	<300	300–700	>700
THIN (gauge) Example: Saline	18	18–16	16	18–16	16	16–14	20–18	18–16	18–16
THICK (gauge) Example: Tetracycline	18–16	18–16	16	16	16–14	16–14	18	16	16

Select the needle to fit the cattle size (the smallest practical size without bending).

Primary considerations in needle selections are:

- Route of administration
- Size of the animal
- Location or site of the injection

Secondary considerations include:

- Viscosity of the fluid (how thick and tenacious the fluid is)
- Volume injected

Best Practices

CLEANING SYRINGES AND NEEDLES

Disposable equipment is recommended and preferred to minimize contamination risk when administering antimicrobials. If reusable syringes are used, they should be heat-sterilized by using hot (at least 180 ^{0} F) purified water. Consult your veterinarian before sterilizing equipment to ensure proper techniques. Improper sterilization of equipment can reduce effectiveness for future injections and lead to an infection at the injection site. If any disinfectants are used — including alcohol — they must be thoroughly rinsed from equipment because they can neutralize vaccines and chemically react with some medications.

Syringes should be thoroughly rinsed with sterile water (not distilled water) before use. Do not contaminate modified live virus products or antimicrobials with disinfectants as it will decrease or eliminate effectiveness.

WHEN TREATING ANIMALS WITH ANY PRODUCT, TAKE THE FOLLOWING PRECAUTIONS:

- ✓ Read both the product label and insert and consult your veterinarian before administering drugs or animal health products.
- ✓ Follow manufacturer's or veterinary prescription labeled dosage, method of administration, and withdrawal times.
- ✓ Discard milk from all four quarters even when treating only one quarter with an IMM infusion.
- ✓ Milk treated cows last or use a segregated facility (divert milk from bulk tank or saleable milk).
- ✓ Thoroughly wash all equipment (inflations, hoses, weigh jars, etc.) that have come in contact with milk from treated cows.
- ✓ Ensure that any procedure used to divert milk from treated cows cannot accidentally send contaminated milk into the pipeline.
- ✓ Confirm only the appropriate animals are receiving medicated feeds and are listed on the Veterinary Feed Directive (VFD) where required.
- ✓ Keep medicated feeds separated from non-medicated feeds and label appropriately.
- ✓ Train employees on proper injection site selection and technique.
- ✓ Clean transfer needles regularly to avoid contamination.

- ✓ Do not put a needle into a vaccine bottle once it has been used for anything else.
- ✓ Use one needle per injection when using antibiotics.
- ✓ Make sure the injection site is clean. Injecting into a wet, muddy, or manure-covered site increases the risk of spreading disease and increases the incidence of injection site lesions. It may also decrease the effectiveness of the injected product.
- ✓ Ensure that calves fed antibiotic waste milk or medicated milk replacer are not sent to sale or slaughter until withdrawal times are met.

NEEDLE QUALITY CONTROL AND SAFETY

Single-use needles are preferred to help prevent the spread of blood-borne diseases such as bovine leukosis and anaplasmosis, and to prevent tissue damage from using dull or damaged needles. If not using single-use needles, you should change the needle:

- ▶ If the needle is bent, burred, or dirty with feces, blood, dirt, or irritating chemicals
- ▶ Each time the syringe is refilled (at a minimum)
- ▶ Between cattle with KNOWN bloodborne infectious diseases such anaplasmosis or tyleria
- ▶ Every 10 to 15 injections for disposable needles (at a minimum)
- ▶ Under the instruction of the herd veterinarian

A bent needle should never be used. A broken needle is an emergency, and time is essential as broken needles can migrate into the tissue. If not immediately handled, needles will be impossible to find. Under no circumstance should animals with broken needles enter the public food supply or be sent to a livestock market. If a needle breaks in any injection site, contact your veterinarian to assist in determining how the animal should be handled.

NEEDLE STORAGE AND DISPOSAL

Needle sticks can be a human safety risk, especially if the vaccine or product is hazardous to human health. Dispose of used needles and other sharps in a protected area using these guidelines:

- Place in a puncture-resistant container with a secure lid.
- Place container in a rigid container lined with plastic.
- Dispose of as solid waste as recommended by local, state, and federal EPA guidelines.

DRUG STORAGE

Maintain complete control over your dairy's drug inventory by limiting access to only authorized persons who are trained in proper drug use. Ensure all authorized persons complete records of every animal treatment.

Animal health products usually have specific storage requirements as indicated on the label. All products should be stored in a clean place where they cannot become dirty or contaminated. Products should also be protected from temperatures outside the labeled range and sunlight exposure. Observe and obey the manufacturer's recommended storage instructions for each product. When refrigeration is necessary, ensure the product stays clean and is safely stored where it isn't likely to overheat or get contaminated by dirt or manure. Place a thermometer in the refrigerator to ensure cold storage temperatures.

Animal health products should be stored away from feed ingredients or mixing areas unless regularly mixed with feed additives. Storage of partially used medication or vaccine bottles is discouraged because they may become contaminated and could cause infections or tissue reactions if reused.

NOTE: The Grade "A" Pasteurized Milk Ordinance requires drugs intended to treat non-lactating dairy animals be segregated from drugs used for lactating animals.

REFERENCES

Evaluation of Milk Laboratories. 2019 Revision. U.S. Department of Health and Human Services.

fda.gov/media/137754/download

BQA Antimicrobial Stewardship for Beef Producers Manual.

https://www.bqa.org/Media/BQA/Docs/bqaantimicrobialstewardshipguidelines2026.pdf

5

CULLING OF CATTLE

Culling cattle should involve a decision-making process to ensure the animals are in appropriate health and condition to be sent to market, including avoidance of residues. Designate and train family and non-family employees to perform the decision-making process of when to cull and how to check for withdrawal times.

THE RISK OF TISSUE RESIDUE VIOLATIONS SHOULD BE MINIMIZED IF:

- Treatment and therapy protocols and appropriate withdrawal times are carefully followed
- Approved animal drugs are used for the class of animal being treated
- Animals are identified and marked, and if necessary, segregated
- Treatment records are maintained
- Proper doses, routes, and frequencies of administration are heeded

What to Consider:

- Market earlier in life so cull cattle are in better shape to withstand the length of the trip.
- Be realistic about the animal's chance of recovery.
- Evaluate the animal's ability to withstand the rigors of transport.
- Ensure that all animals have met withdrawal dates.
- Confirm that the animal isn't a risk to public or animal health.
- Evaluate animal health, calving status, milk production, and other health factors, including body condition score and locomotion score.
- Cows that are close to calving, actively calving, or have very recently calved are not fit for transport due to welfare concerns. Per regulations, slaughter facilities cannot slaughter animals that are actively calving or have a retained placenta. Fresh cows need to have already passed their placenta before shipping.
- Cull cattle with a recent fracture unrelated to mobility should be transported directly to a packing or processing facility, if the animal is ambulatory.
- Minimize the risk of animals becoming non-ambulatory (downer) during transport.
- Cattle welfare should be considered alongside economic decisions.

Treat, Delay, or Euthanize?

- Exhaustion
- Calving
- Weakness
- Fever greater than 102.5°F
- Lameness to the point that they are in pain or having trouble keeping up with the herd (mobility score 3 or higher)
- Withdrawal times have not been met
- Full udders (delay to dry off)
- Cow has not passed placenta after calving

Delay Transportation & Reassess
(consult veterinarian)

- Pneumonia without fever
- Cancer eye (eye intact)
- Injuries that are not severely affecting mobility
- Prolapse (not severe)
- Hardware with localized signs
- Broken jaw
- Intestinal condition, i.e., displaced abomasum
- Sickness that is not a public health concern
- Cows that have calved in the last 48 hours
- Cows within two weeks of calving

Transport Direct to Packer
(consult veterinarian)

What to Consider:

- It's important to inform the plant of these issues prior to hauling cattle to salvage slaughter.
- Haul cattle either segregated in their own compartment or with one other quiet animal. Consider bedding for long hauls.
- This list is not all inclusive. All animals will be inspected by USDA FSIS antemortem (before death) and postmortem (after death).

- Fractures of limb and/or spine
- Arthritis with multiple joints
- Severe cancer eye
- Extremely thin
- Cancer/Leukosis
- Severe prolapse uterus
- Nervous disorder or blind in both eyes
- Water belly
- Severe open wounds
- Hernia that impedes movement
- Illnesses with systemic involvement
- Non-ambulatory animals that are not improving

Humanely Euthanize

BEST PRACTICE

Animals that were/are dehydrated or were systemically ill, may not clear medications normally/as quickly as other animals, and extended withdrawal times may be prudent. Work with your VOR to establish guidelines for when this may be necessary.

To learn more, please reference the *Right Way, Right Time* document:
https://nationaldairyfarm.com/wp-content/uploads/2025/10/Right-Way-Right-Time.pdf

Know Your Transporter

Residue issues associated with animals sent to slaughter might occur after the animal leaves the farm if identification tracking is not recorded completely for commingled animals or if transporters decide to give treatments.

USE A TRANSPORTATION COMPANY THAT:

- Has a good reputation
- Knows your animal care expectations
- Keeps appropriate records
- Ensures farm traceability using animal identification
- Provides safety and comfort for the animals during transport

Communicate with the hauler about where the animals are destined to go, especially when selling bull calves and beef on dairy crosses. If medicated milk replacers have been fed, that animal must be withheld from sale, or the hauler should be informed that the animal has been treated and can affirm that the animal will not go to a terminal market. When not selling animals directly to a terminal market, sell to intermediate owners who have instituted residue prevention programs consistent with those defined in this document. Carefully identify and document chain-of-custody for all animals, including bull calves and beef on dairy crosses, as you may be held responsible for residues caused outside of your facility.

Programs

BEEF QUALITY ASSURANCE TRANSPORTATION (BQAT) PROGRAM

bqa.org

Transportation quality assurance plays a critical role in the health and welfare of cattle. Proper handling and transport can reduce cattle illness, prevent bruising and improve meat quality from these animals. By using best practices, transporters can save producers millions of dollars each year. When transporters participate in the BQAT program, they show consumers they are ready to take every step possible to keep cattle as healthy and safe as possible. **Visit bqa.org to become certified.**

VEAL QUALITY ASSURANCE (VQA) PROGRAM

veal.org

VQA is a program using science-based best practices to ensure veal calves receive quality care through every stage of life. The program helps ensure veal calves are raised using production standards that result in a safe, wholesome, high-quality product that meets regulatory and customer expectations. The success of all calves entering the veal market is highly dependent on early care at the dairy farm. The same principles of calf care used for dairy heifers should be applied to bull calves, regardless of if they are entering the beef or veal market.

CALF CARE & QUALITY ASSURANCE (CCQA) PROGRAM

calfcareqa.org

The Calf Care & Quality Assurance (CCQA) program is a first-of-its-kind program for the U.S. dairy calf-raising sector. This program is meant for those raising many different breeds of male and female calves intended for dairy and/or beef production systems. CCQA promotes a mindset — a way of thinking — that prompts calf raisers to approach management decisions with thoughtfulness and an appreciation for the responsibility they have to their animals, consumers, the environment, and the broader cattle industries in the United States.

For more information, see the AABP transportation guidelines:
https://aabp.org/resources/AABP_Guidelines/transportationguidelines-2025.pdf

Veal and Dairy Beef Calves

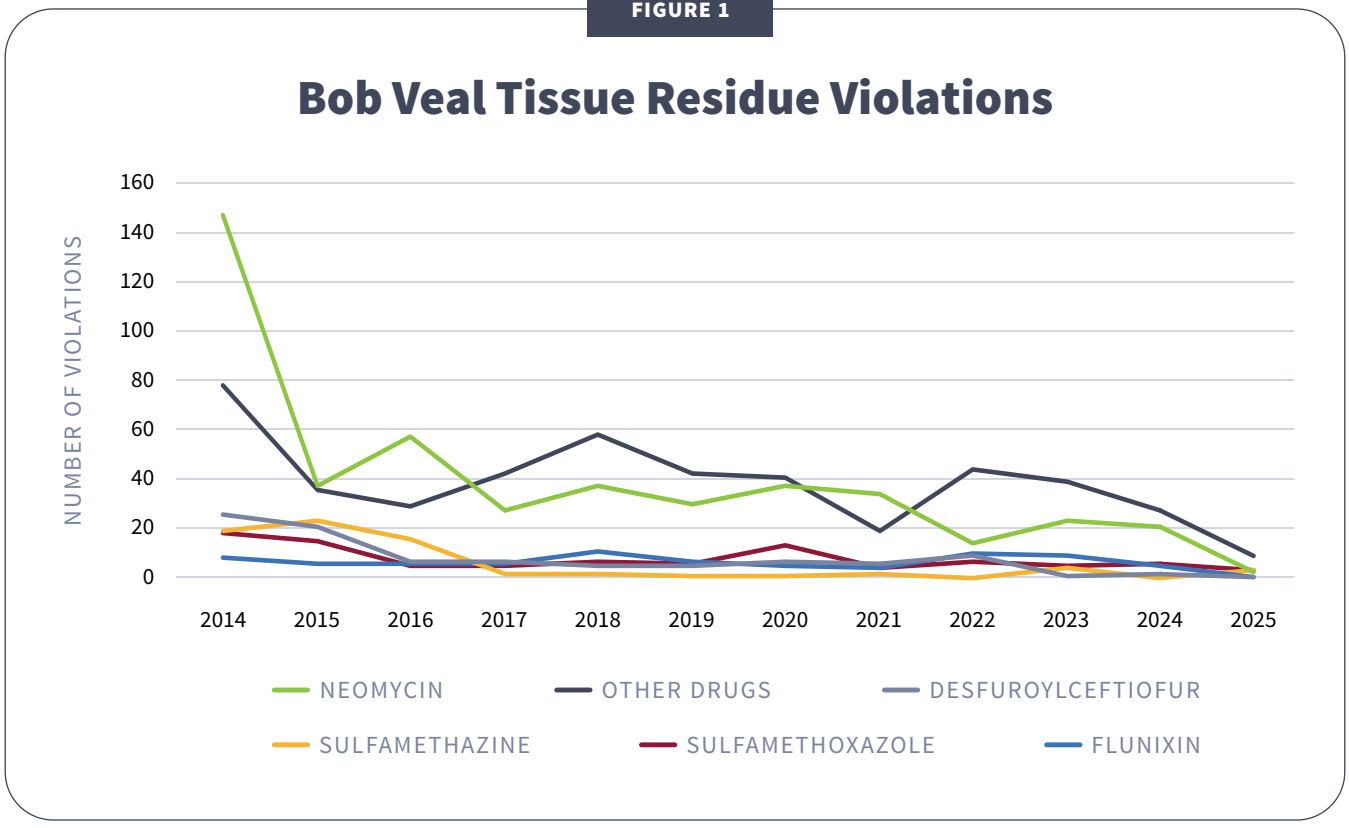
For veal and dairy beef calves that you plan to market prior to weaning, use only products that are approved in pre-ruminant calves. Avoid any products labeled with the statement: ***"Not for use in calves to be processed for veal."***

Bob veal is the meat from young calves up to 150 pounds, typically marketed directly from a dairy farm. According to USDA data, bob veal is the second largest category of tissue residue violations after cull cows.

USDA Food Safety and Inspection Service (FSIS) has reported a 70% decline in the number of tissue residues in bob veal since 2014 (see Figure 1). Feeding medicated milk replacer or milk from treated cows may be a source of antibiotic or drug residues in bob veal.

Even if a dairy farm follows all protocols to ensure marketed calves will not have any tissue residues, additional assurance measures can be taken. Proper identification of any animal that leaves the dairy can prevent misidentification at slaughter and strengthen food chain traceability.

FIGURE 1



Source: National Milk Drug Residue Database. https://www.nmdrd.com

Every calf should have a durable, permanent form of identification (i.e., ear tag). A written calf sales log on your dairy should be used to prevent errors. Include the following information:

- Identification – tag number with description (e.g., age, breed) or photo
  - The FARM Program recommends using 840-RFID ear tags. Other acceptable permanent individual animal identification include: brite tags, vaccination tags, visual tags (dangle/bangle), button tags, RFID tags, and tattoo.
- Date of transaction
- Signature of calf hauler
- Intent/destination of hauling for each calf (e.g., is it going to a calf ranch or directly to slaughter?)

Make sure an employee is present when the calf hauler picks up market calves. Obtain a receipt from the hauler.

THE RECEIPT SHOULD INCLUDE THE FOLLOWING:

- Calf hauler's name
- Calf hauler business name
- Calf hauler driver's license number
- Number of calves received on that day
- Identification of each calf

These steps are important to verify the withholding times and identification of all animals leaving your farm. Even the slightest misstep in management could cause residue violations and potentially damage the dairy farm's reputation. Work with your herd veterinarian to help prevent residues in young calves leaving the dairy.

REFERENCES

U.S. National Residue Program for Meat, Poultry and Egg Products. USDA Food Safety and Inspection Service. https://www.fsis.usda.gov/sites/default/files/media_file/documents/FY2025-Sampling-Summary-Report.pdf

Zoetis. Prevent residues in market bull calves. https://www.zoetisus.com/news-and-media/prevent-residues-in-market-bull-calves/

U.S. Department of Agriculture, Animal and Plant Health Inspection Service. Animal Disease Traceability Framework, Official Eartags – Criteria and Options. aphis.usda.gov/livestock-poultry-disease/traceability

6

RESIDUE TESTING

Tolerance Limits and Target Testing Levels

The regulatory tolerances for milk and tissue residues vary depending on the drug and whether it was found in milk, muscle (meat), liver, or kidney. The withdrawal times are **only valid if a drug is used according to the label directions and in the animal class listed on the label**. When a drug does not have a tolerance, FDA and the National Conference on Interstate Milk Shipments (NCIMS) have adopted target testing levels communicated in a milk guidance document (M-I-18-19). The document provides guidance levels for antibiotic detection and rejection in milk to prevent contaminated milk from entering the food chain.

If a drug is used in an animal production class **not on the label**, there is **NO TOLERANCE** for that drug – any detectable amount, even below the target testing/tolerance level for the labeled class, is a violation. Target testing levels are typically used to make milk rejection decisions for the most commonly used drugs that do not have an FDA established tolerance, such as penicillin.

Drugs not approved for use in lactating dairy cattle do not have FDA-established tolerances for residues in milk. Drugs that are conditionally approved are not eligible for extra-label drug use. Tissue tolerances for drugs approved for beef cattle do not apply to lactating dairy cattle. Extra-label drug use in unapproved classes of animals is discouraged and, if used, must be prescribed and supervised by a veterinarian. A complete list of the tolerances can be found in the FDA Green Book, which lists all approved animal drugs. If you have questions or concerns about potential residues or withdrawal times, contact your veterinarian.

Malicious Contamination

Dairy farmers should recognize and remember that drug residues in milk can occur because of intentional, malicious contamination. Ensure that medications and other potential contaminants are stored securely and monitor your farm for any suspicious activity.

Milk Drug Residue Testing

GRADE "A" PASTEURIZED MILK ORDINANCE (PMO)

The PMO is a set of rules that state regulatory agencies use to implement their Grade "A" milk programs. It requires all bulk milk tankers to be sampled and analyzed for beta-lactam drug residues before the milk is processed.

States are also required to test farm-level milk samples at least four times every six months for antimicrobials (Section 6 testing). Most states use an inhibitor test, which shows sensitivity to any antibiotic in milk. Customers (i.e., processors) may require additional testing for quality assurance purposes. Any tanker found positive for any drug residue is rejected for human consumption.

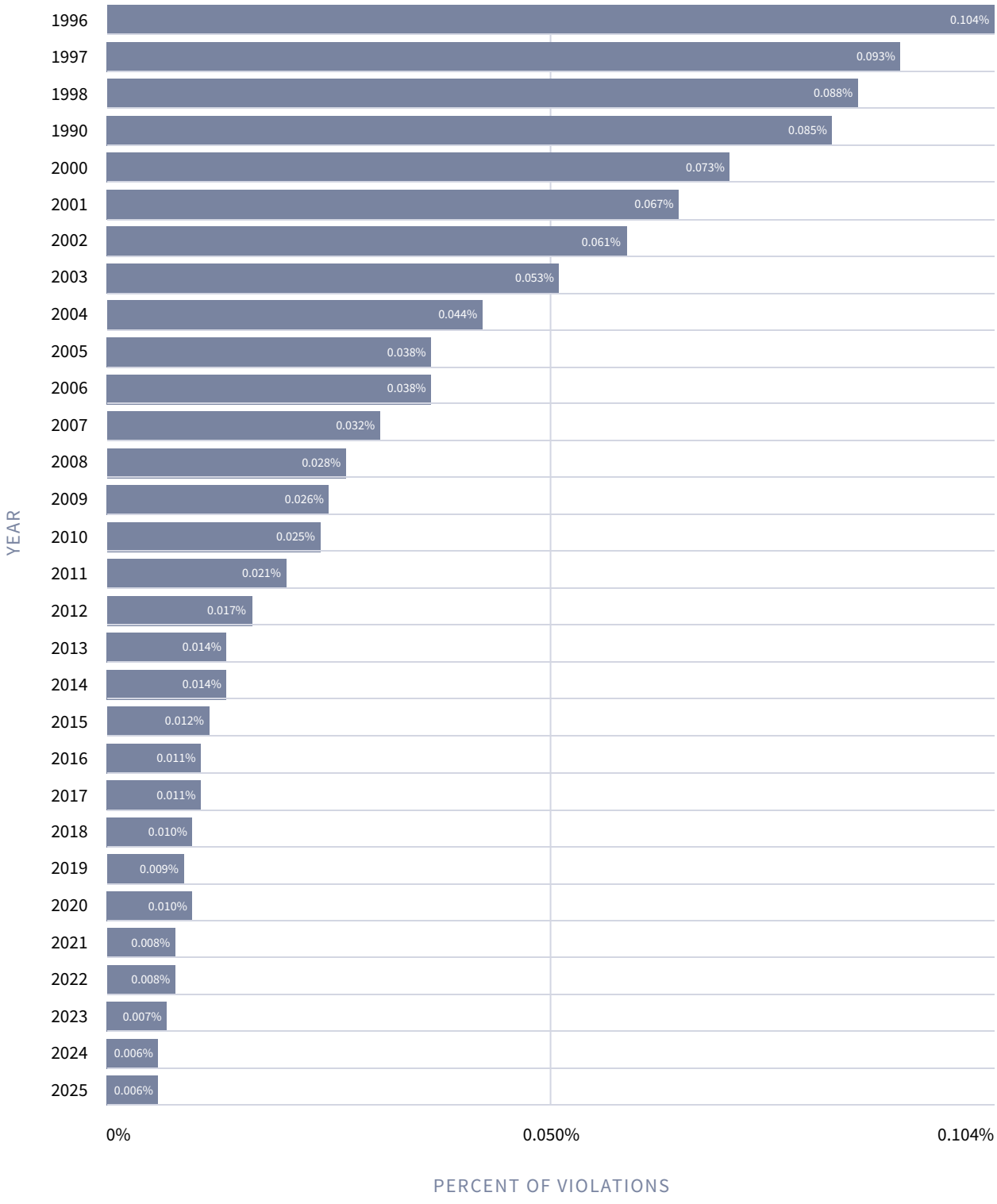
In 1996, of the 3,384,779 bulk milk tankers tested, 0.104% tested positive. Through increased education and industry advancements, in the 2025 NMDRD report, more than 3.2 million bulk milk pickup tankers were tested from October 2024 to September 2025, yielding only 206 (one in every 15,860 milk trucks) positive samples.

This equals only .006% of milk tankers testing positive for drug residues. This reduction signifies a dramatic decrease from an already low level of occurrence.

See Figure 1.

FIGURE 1

Percent of Bulk Milk Tankers Positive for Antibiotic Residues



Source: National Milk Drug Residue Database. https://www.nmdrd.com

Multi-Drug Screening Test for Bulk Tank Milk

In 2010, the FDA developed a multi-class, multi-residue liquid chromatography/tandem mass spectrometry (LC-MS/MS) screening and confirmation method for drug residues in milk. The procedure is detailed in FDA Laboratory Information Bulletin #4443. The purpose of this method is to screen milk samples to determine if a residue is present at a level of interest (e.g., target testing/tolerance levels or established levels of detection) and to confirm the identity of the compound. An exact quantitative determination of any residue is not addressed with this procedure and is obtained using other methodology. Milk cooperatives and dairy processors are not required to perform this test, but it may be performed for additional knowledge about potential milk residues.

THIS METHOD TESTS FOR THE FOLLOWING DRUGS:		
Ampicillin	Penicillin G	Cloxacillin
Cephapirin	Sulfamethazine	Sulfadiazine
Sulfadimethoxine	Sulfathiazole	Sulfaquinoxaline
Sulfapyridine	Sulfachloropyridazine	Sulfamerazine
Oxytetracycline	Tetracycline	Chlortetracycline
Doxycycline	Tylosin	Tilmicosin
Erythromycin	Sarafloxacin	Enrofloxacin
Ciprofloxacin	Flunixin	Bacitracin
Thiabendazole	Virginiamycin	Tripelennamine

Some testing laboratories have modified this method to include additional drugs.

Tissue (Meat) Residue Testing

The USDA FSIS conducts tests for chemicals – including antimicrobials and other drugs, pesticides and environmental chemicals – in meat, poultry and egg products destined for human consumption under two programs. The first is an annual sampling program that tests for these chemicals through a scheduled random sampling of tissue from healthy-appearing food animals. The development of the plan includes:

- Determining the compounds that are of food safety concern
- Using algorithms to rank the selected compounds
- Pairing these compounds with appropriate production classes
- Establishing the number of samples to be collected

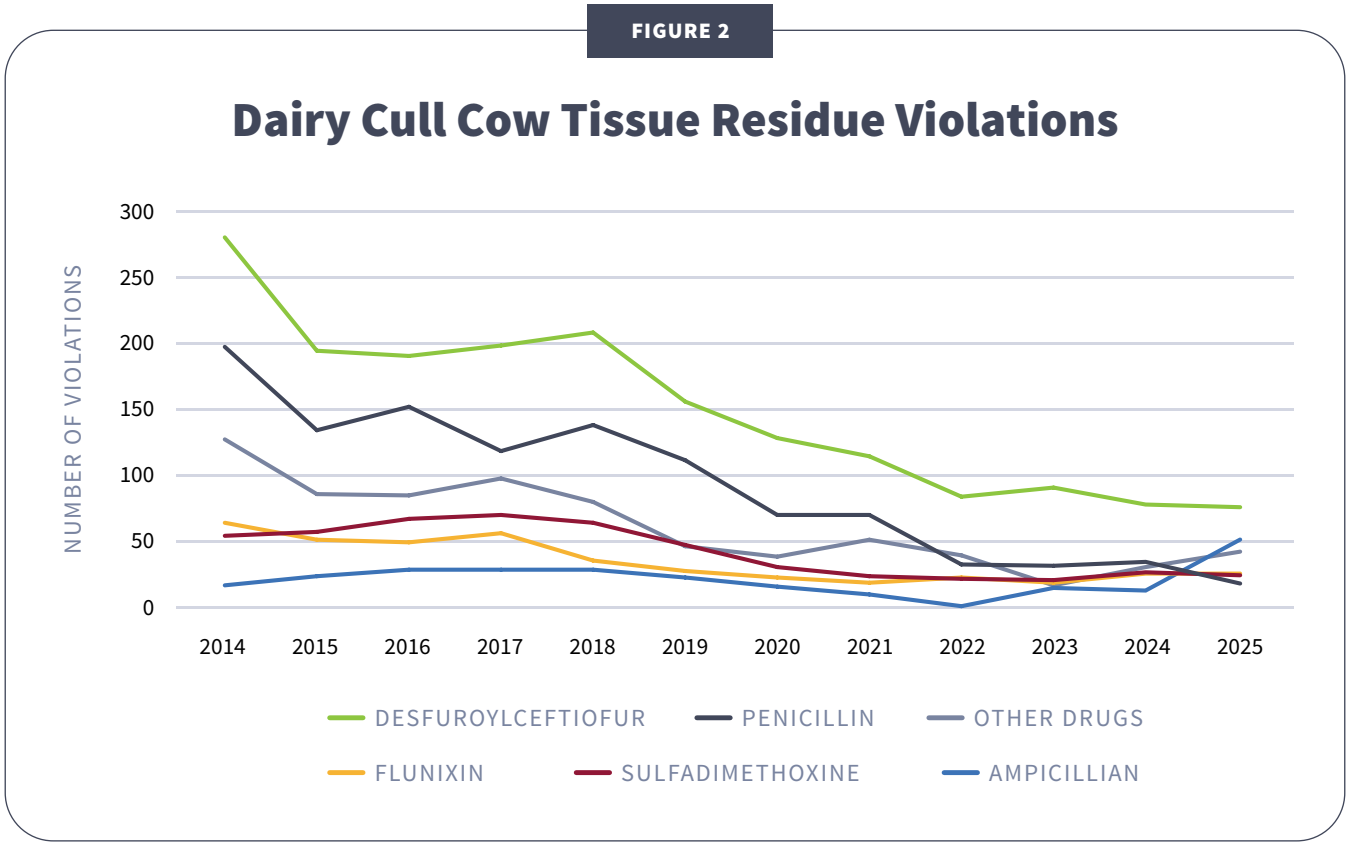
The second is the USDA FSIS Hazard Analysis and Critical Control Point (HACCP) program implemented at slaughter facilities. This program identifies the animals most likely to have drug residues and targets them for testing. Animals that display lameness, injection site lesions, or signs of illness are targeted for testing, furthering the importance of good decision making when culling animals. See chapter 5 for more information on culling animals. *Figure 2*

Factors that can contribute to a higher risk of residues are found in Figure 2 and can be useful in determining if animals should be culled. If there is any doubt about the potential for drug residues in an animal, the animal should be withheld from market.

When animals are selected at slaughter for drug screening, they are first tested with a broad inhibition test called a Kidney Inhibition Swab (KIS) test. Positive KIS animal tissues, kidney, muscle, and liver, are then sent to an FSIS laboratory for a specific multi-drug analysis (LC-MS-MS). The LC-MS-MS is used for drug identification and quantification. When tissues have drugs identified above tolerance levels, they are reported positive in the yearly USDA database.

Of the 2.6 million adult dairy cows slaughtered for beef, only a small percentage tests positive for residues. USDA FSIS has reported a 68% decline in the number of tissue residues in market dairy cows since 2014. However, market dairy cows represent about two-thirds of all violations reported under the USDA FSIS inspector-generating sampling plan.

FIGURE 2



Source: National Milk Drug Residue Database. https://www.nmdrd.com

Conditions that Warrant Additional Testing at USDA Slaughter Facilities

The following list contains USDA descriptions of conditions that may warrant testing of carcasses for drug residues:

MASTITIS:

Signs of mastitis can vary based on the severity and duration of infection. Cows might show varying degrees of clinical signs, from pus-like or discolored discharge from the teats, and redness and swelling of the udder, to no visible change in the udder.

METRITIS:

USDA inspectors will look for this postmortem indication. Signs of metritis may include high fever, major drops in milk production, or uterine/vaginal discharge.

PERITONITIS AND SURGERY:

Signs of recent surgical procedures or findings of surgical devices (e.g., suture, toggles, fistula devices) are only significant if they are associated with active peritoneal or subcutaneous inflammation.

INJECTION SITE LESIONS OR ABSCESSES:

Live animals and carcasses with lesions or abscesses associated with injections on any part of the animal are of potential concern. Pay close attention to the proper route of administration for medications.

OTHER DISEASE SYMPTOMS:

Any signs of the following diseases or conditions can lead to an animal being tested for potential chemical residues or to determine fitness for harvest:

- Depression
- Elevated or subnormal body temperature
- Hyperemic skin
- Congested mucous membranes
- Dehydration
- Poor body condition in association with an injury or inflammatory condition (e.g., abscesses, arthritis, pneumonia, mastitis, metritis)

SIGNS OF TREATMENT:

Indicated by leakage around jugular veins, subcutaneously, intramuscularly, intraperitoneally (within the abdomen), or clinical signs indicative of treatment by mouth, such as discoloration from particles found in any part of the digestive tract. Inspectors are aware of common industry practices that could indicate an animal was recently treated. Dairy cows arriving for slaughter with fetlock or ankle bands indicate that the animal likely had previously received treatment for a medical condition. When observed, inspectors are instructed to determine the appropriateness of additional testing or removal from the food supply.

USDA FSIS Residue Repeat Violator Lists

The USDA FSIS maintains a Residue Repeat Violator List (Part 1) for use by FSIS inspection personnel. The list contains the names and addresses of producers who have more than one meat residue violation in a 12-month period in animals presented for slaughter. Specific information about the violation can also be found in this list, including the plant where the violation was determined, the drug residues identified and their concentrations and tolerances. Violators listed may have had multiple violations documented in the same processing facility or in separate facilities. This list is intended to aid inspectors in discovering residue tolerance violations before they reach consumers. The USDA FSIS provides a user guide that explains the information contained in the list.

The USDA FSIS also maintains a Residue Repeat Violator List (Part 2) for use by livestock markets and establishments that contains similar information to assist plant owners and operators in identifying residue history of livestock suppliers. This list documents only the source name and address information of repeat violators, so that livestock marketers and buyers may use caution when marketing and processing animals from listed suppliers. The USDA FSIS provides a user guide that explains the information contained in the list.

REFERENCES

U.S. National Milk Drug Residue Data Base. nmdrd.com

1996 Annual Report. National Milk Drug Residue Data Base. nmdrd.com/fy-96.pdf

Approved Animal Drug Products (Green Book). U.S. Food & Drug Administration. fda.gov/animal-veterinary/products/approved-animal-drug-products-green-book

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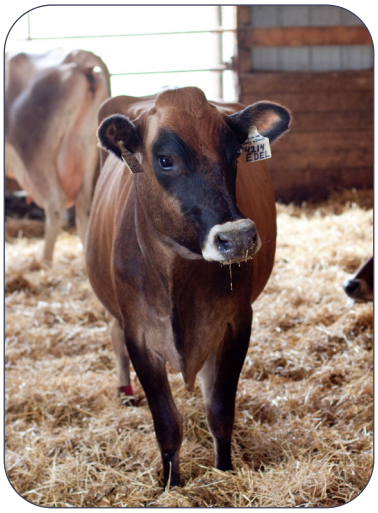

7

DRUG CLASSES

CLASSES OF ANIMAL DRUGS		
OVER-THE-COUNTER (OTC)	**PRESCRIPTION (RX)**	**VETERINARY FEED DIRECTIVE (VFD)**
Can be sold by any person or establishment without a veterinary prescription. Not all OTC products are allowed for use in food-producing animals.	Can be dispensed only by or upon the lawful written order of a licensed veterinarian.	Can only be used in or on feed under a written order issued by a licensed veterinarian (also called a VFD) for an approved application.

Medications Administered Through Feed or Water

In 2015, the FDA finalized the Veterinary Feed Directive (VFD), which mandates the rules and responsibilities of licensed veterinarians in prescribing and administering medically important antimicrobials in feed. A licensed veterinarian must have an established VCPR to write a VFD. The final VFD rules also prohibit any extra-label drug use, so a VFD must conform exactly to the drug manufacturer's label indications, including the specific disease or condition being treated and class of cattle. At the same time, FDA made all medically important antimicrobials administered through water as prescription only.

Medically important antimicrobials subject to the VFD when administered in feed or requiring prescription if administered through water include:

- Aminoglycosides
- Lincosamides
- Macrolides
- Penicillins
- Streptogramins
- Sulfonamides
- Tetracyclines

Ionophores, like monensin and lasalocid, are not affected by the guidance since they have no human medical relevance. Thus, the actions have no effect on the use of ionophore additives in lactating and dry cows or as coccidiostats in growing heifers.

THERE ARE NO LEGAL EXTRA-LABEL USES OF VFD DRUGS.
THERE ARE NO VFD DRUGS APPROVED FOR USE IN LACTATING DAIRY CATTLE.

Extra-Label Drug Use

"FEDERAL LAW RESTRICTS THIS DRUG TO USE BY OR ON THE ORDER OF A LICENSED VETERINARIAN."

This statement is on every prescription drug sold. Any use of a drug not specifically listed on the label is considered extra-label drug use and is regulated by the FDA under the Animal Medicinal Drug Use Clarification Act (AMDUCA) of 1994. Using a prescription or over-the-counter drug in an extra-label manner is illegal unless it is specifically prescribed with extended withdrawal times by a veterinarian working in the context of a valid VCPR. As a first line of therapy, a veterinarian must always use drugs approved within the class of animal to which the drug is being administered.

Any extra-label use of drugs requires a prescription that must include written instructions for the specific condition to be treated, including dose, route of administration, frequency of use, and withdrawal times for milk and/or meat. All extra-label use requires an extended withdrawal time. A list of animal drugs prohibited for use in food animals, including extra-label use, can be found on Page 54.

EXAMPLES OF EXTRA-LABEL DRUG USE:

- Changing the dose, such as giving more penicillin per dose than listed on the label
- Changing the route of administration, such as giving flunixin intramuscularly (IM) or subcutaneously (SQ) instead of intravenously (IV)
- Giving a drug to a different production class of animal, such as using florfenicol in a lactating dairy cow when it should only be used in dairy breed calves under 20 months of age or non-lactating animals
- Giving a drug for an indication (disease) not listed on the label, such as using ceftiofur for diarrhea
- Changing the withholding times, such as not following milk withholding times for fresh cows after dry treatment administration
- Changing the amount of drug per injection site, such as giving the whole dose of penicillin in one injection site rather than splitting the dose so that no more than 10 cc is given at any one injection site
- Changing the duration of therapy, such as using ampicillin for seven days

Precautions for Extra-Label Drug Use in Dairy Cattle

- Always use drugs approved for the class of animal it is being administered to as the first line of therapy.
- It is irresponsible to give a drug with a high risk of residue to an animal that has a poor chance of recovery. Animals that are suffering and have a poor chance of recovery should be euthanized. Animals healthy enough for slaughter and poor candidates for treatment should be culled/marketed instead of being treated with an unapproved drug that has a higher risk of creating a milk/meat residue.
- Record all treatments in your treatment records and keep them for a minimum of two years.
- Regularly review treatment protocols and treatment records with your VOR.

Potential Residue Violations Will Likely Occur from Extra-Label Drug Use When:

- Any detectable level is found for a drug not approved for lactating dairy cattle.
- Current on-farm or bulk tank milk tests at processing facilities cannot detect levels low enough to ensure the absence of residues.
- Animals that are sick or compromised may metabolize drugs at a slower rate than healthy animals, which may result in a significantly extended withdrawal time for both meat and milk.
- The labeled withdrawal times do not apply to unapproved production classes. While FARAD (see Page 17) can provide withdrawal recommendations, they generally do not have enough information to project a “zero detectable level,” particularly with the sensitivity of current testing methodologies. Veterinarians and dairy farmers should exercise extreme caution using drugs not approved for that production class of animal and consider avoiding such use due to unknown withdrawal times.

DRUGS NOT APPROVED FOR USE IN FOOD-PRODUCING ANIMALS

The following drugs are **NOT APPROVED AND ARE ILLEGAL TO USE IN ANY SPECIES OF FOOD-PRODUCING ANIMAL:**

- Chloramphenicol
- Clenbuterol
- Diethylstilbestrol (DES)
- Dipyrone
- Gentian violet
- Glycopeptides (example vancomycin)
- Nitrofurans (including topical use)
- Nitroimidazoles (including metronidazole)

Following a thorough literature review, the AVMA, AABP, and AVC recommend veterinarians refrain from using aminoglycosides (Amikacin, Gentamicin, Kanamycin and Neomycin) in cattle except where approved for use by the FDA, as these antimicrobials can cause very prolonged tissue residues.

DRUGS PROHIBITED FROM EXTRA-LABEL USE IN FOOD PRODUCING ANIMALS (21 CFR SEC. 530.41)

The following drugs, families of drugs and substances are prohibited for extra-label drug use in food-producing animals*:

- Chloramphenicol
- Clenbuterol
- Diethylstilbestrol (DES)
- Dimetridazole
- Ipronidazole
- Other nitroimidazoles
- Furazolidone
- Nitrofurazone
- Sulfonamide drugs in lactating dairy cattle (except approved use of sulfadimethoxine, sulfabromomethazine and sulfaethoxypyridazine)
- Fluoroquinolones (e.g., ciprofloxin, enrofloxacin)
- Glycopeptides
- Phenylbutazone in female dairy cattle 20 months of age or older
- Cephalosporins (excluding cephapirin):
  - For disease prevention purposes
  - At unapproved doses, frequencies, durations, or routes of administration
  - If the drug is not approved for that species and production class

* This list is subject to change. Consult the current version of 21 CFR Sec. 530.41 for the most up-to-date list.

REFERENCES

CVM GFI #152 Evaluating the Safety of Antimicrobial New Animal Drugs with Regard to Their Microbiological Effects on Bacteria of Human Health Concern. U.S. Food and Drug Administration. 2003. fda.gov/regulatory-information/search-fda-guidance-documents/cvm-gfi-152-evaluating-safety-antimicrobial-new-animal-drugs-regard-their-microbiological-effects

Code of Federal Regulations Title 21. CFR 530.41. U.S. Food and Drug Administration. 2019. www.ecfr.gov/current/title-21/chapter-I/subchapter-E/part-530/subpart-E/section-530.41

Cephalosporin Extra-Label Use Prohibitions

The FDA prohibits certain extra-label or unapproved uses of the cephalosporin class of antimicrobials in cattle. This went into effect in 2012 under FDA's Order of Prohibition of Cephalosporins. Cephalosporins in dairy animals are prohibited for use in the following manner:

- At unapproved dose levels, frequencies, durations, or routes of administration
- In cattle that are not approved for use in that species (e.g., cephalosporin drugs intended for humans, companion animals, or a different species or class of food animal)
- For disease prevention

CEPHALOSPORINS EXAMPLES

CEFTIOFUR

- EXCEDE®
- EXCENEL® RTU EZ
- Naxcel® Sterile Powder
- SPECTRAMAST® DC
- SPECTRAMAST® LC
- Cefenil® RTU

CEPHAPIRIN

- ToMORROW®
- ToDAY®

ANY USE OF CEPHAPIRIN IN A MANNER NOT LISTED ON THE LABEL WITHOUT A VCPR IS ILLEGAL.

EXCEPTIONS TO THE PROHIBITION:

- Use to treat or control an extra-label disease indication, as long as this use adheres to a labeled dosage regimen (e.g., dose, route, frequency, and duration of administration) approved for that particular species and production class.

8

APPROVED DRUGS AND SCREENING TESTS

Data Tables for Information Only

National Milk Producers Federation (NMPF) and the Farmers Assuring Responsible Management (FARM) Program do not endorse any of the veterinary drugs or tests identified on the lists in this manual. The lists of veterinary drugs and tests are provided only to inform dairy farmers what products may be available. Dairy farmers, with the guidance of their veterinarian, are responsible for determining whether to use any of the veterinary drugs or tests.

All information regarding the veterinary drugs or tests was obtained from the products' manufacturers or sponsors – NMPF and the FARM Program have not made any further attempt to validate or corroborate any of this information. We urge dairy farmers to consult with their veterinarians before using any veterinary drug or test, including any of the products identified on the lists in this manual.

Data provided by the manufacturer or marketer is current as of January 2026. Veterinarians needing extra-label information should consult the FDA Green Book or contact FARAD at 888-873-2723 or FARAD.org.

FOR NON-LACTATING CATTLE

FDA-APPROVED DRUGS FOR TYPE A MEDICATED ARTICLE USE*

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Chlortetracycline	VFD	None	Aureomycin G	Phibro Animal Health
	VFD	None	ChlorMax 50	Phibro Animal Health
Chlortetracycline calcium	VFD	None	Pennchlor®	Pharmgate Animal Health
	VFD	None	Deracin™	Pharmgate Animal Health
Chlortetracycline hydrochloride	VFD	10 days	CLTC® 100 MR	Phibro Animal Health
Decoquinate	OTC	None	Deccox®	Phibro Animal Health
Fenbendazole	OTC	13 days	Safe-Guard 0.5% Top Dress Pellets	Merck Animal Health
	OTC	13 days	Safe-Guard 1.96% TYPE B	Merck Animal Health
Lasalocid sodium	OTC	None	Bovatec Premix	Phibro Animal Health
Melegestrol acetate	OTC	None	MGA®	Phibro Animal Health
Monensin (sodium)	OTC	None	Rumensin 90	Elanco Animal Health
Morantel tartrate	OTC	14 days	Rumatel® 88	Phibro Animal Health
Neomycin-oxytetracycline	VFD	5 days	Neo-Oxy 100/100 MR®	Pharmgate Animal Health
	VFD	0-5 days	Neo-Oxy 50/50®	Pharmgate Animal Health
	VFD	0 or 5 days	Neo-Terramycin® 100/100	Phibro Animal Health
	VFD	5 days	Neo-Terramycin® 100/100D	Phibro Animal Health
	VFD	0 or 5 days	Neo-Terramycin® 50/50	Phibro Animal Health
	VFD	5 days	Neo-Terramycin® 50/50D	Phibro Animal Health
Oxytetracycline dihydrate	VFD	0-5 days	Pennox®	Pharmgate Animal Health
	VFD	None	Terramycin® 100	Phibro Animal Health
	VFD	None	Terramycin® 100MR	Phibro Animal Health
	VFD	None	Terramycin® 200	Phibro Animal Health
	VFD	None	Terramycin® 50	Phibro Animal Health

FDA-APPROVED DRUGS FOR TYPE A MEDICATED ARTICLE USE*

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Poloxalene	OTC	None	Bloat Guard® Liquid Type A Medicated Article	Phibro Animal Health
	OTC	None	Bloat Guard® Top Dressing	Phibro Animal Health
	OTC	None	Bloat Guard® Type A Medicated Article	Phibro Animal Health
Virginiamycin	VFD	None	V-Max® 50	Phibro Animal Health

FDA-APPROVED DRUGS FOR INJECTABLE USE

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Ampicillin trihydrate	Rx	6 days	Polyflex®	Boehringer Ingelheim Animal Health, USA Inc.
Ceftiofur crystalline free acid	Rx	13 days	EXCEDE®	Zoetis, Inc.
Ceftiofur hydrochloride	Rx	3 days	Cefenil® RTU (ceftiofur hydrochloride sterile suspension)	Norbrook Laboratories, Ltd.
	Rx	4 days	EXCENEL® RTU EZ	Zoetis, Inc.
Ceftiofur sodium	Rx	4 days	Naxcel® Sterile Powder	Zoetis, Inc.
Cloprostenol sodium	Rx	None	SynchSure	Boehringer Ingelheim Animal Health, USA Inc.
	Rx	None	Estrumate®	Merck Animal Health
Dinoprost tromethamine	Rx	None	ProstaMate	Bimeda, Inc.
	Rx	None	Lutalyse® Sterile Solution	Zoetis, Inc.

NOTES

The term non-lactating cattle is defined as dairy bulls, dairy calves, and replacement heifers. Read label indications carefully. Some products are not approved for non-ruminating calves and female dairy cattle 20 months of age and older. Some products cannot be used with veal calves. Carefully consult the labels.

* Per changes to FDA regulatory definitions, previously referred to as feed additives, these products are now being referred to as "Type A Medicated Article."

FDA-APPROVED DRUGS FOR INJECTABLE USE

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Doramectin	OTC	35 days	Dectomax® Injectable and Dectomax CA-1	Zoetis, Inc.
	Rx	15 days	Valcor	Zoetis, Inc.
Enrofloxacin	Rx	28 days	EnroMed	Bimeda, Inc.
	Rx	28 days	Baytril® 100	Elanco Animal Health
	Rx	28 days	Enroflox® 100 (enrofloxacin) Injectable Solution	Norbrook Laboratories, Ltd.
Eprinomectin	Rx	48 days	LongRange®	Boehringer Ingelheim Animal Health, USA Inc.
Florfenicol	Rx	28 or 38 days (See label)	Nuflor® Injectable Solution	Merck Animal Health
	Rx	33 day SubQ / 28 days IM	Norfenicol® (florfenicol) Injectable Solution	Norbrook Laboratories, Ltd.
Florfenicol and Flunixin meglumine	Rx	38 days	Resflor Gold®	Merck Animal Health
Flunixin meglumine	Rx	4 days	Flunixin Injection (flunixin meglumine injection)	Norbrook Laboratories, Ltd.
Gamithromycin	RX	35 days	Gamrozyne	Bimeda, Inc
	Rx	35 days	Zactran	Boehringer Ingelheim Animal Health, USA Inc.
Gonadorelin diacetate tetrahydrate	Rx	None	OvaCyst	Bimeda, Inc.
	Rx	None	Cystorelin	Boehringer Ingelheim Animal Health, USA Inc.
	Rx	None	Fertagyl®	Merck Animal Health
Gonadorelin hydrochloride	Rx	None	Factrel®	Zoetis, Inc.
Gonadotropin (chorionic)	Rx	None	Chorulon®	Merck Animal Health
Ivermectin	OTC	35 days	Bimectin Injection	Bimeda, Inc.
	OTC	35 days	IVOMEC 1% Injection for Cattle	Boehringer Ingelheim Animal Health, USA Inc.
	OTC	35 days	Noromectin® (ivermectin) Injection for Cattle and Swine	Norbrook Laboratories, Ltd.

FDA-APPROVED DRUGS FOR INJECTABLE USE

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Ivermectin and clorsulon	OTC	21 days	Ivomec plus Injection	Boehringer Ingelheim Animal Health, USA Inc.
Ivermectin/Clorsulon	OTC	21 days	Bimectin Plus Injection	Bimeda, Inc.
	OTC	21 days	Noromectin® Plus (ivermectin and clorsulon) Injection for Cattle	Norbrook Laboratories, Ltd.
Ketoprofen	Rx	2 days	Ketofen®	Zoetis, Inc.
	Rx	18 days	DRAXXIN®KP	Zoetis, Inc.
Levamisole	Rx	15 days	Valcor	Zoetis, Inc.
Moxidectin	OTC	21 days	MoxiSolv Injection	Bimeda, Inc
	OTC	21 days	Cydectin Injectable	Elanco Animal Health
	OTC	21 days	Tauramox® (moxidectin) Injectable Solution	Norbrook Laboratories, Ltd.
Oxytetracycline	Rx	28 days	Bio-Mycin® 200	Boehringer Ingelheim Vetmedica, Inc.
	RX	28 days	Noromycin® 300 LA (oxytetracycline injection)	Norbrook Laboratories, Ltd.
	RX	28 days	Oxytetracycline Injection 200 (oxytetracycline injection)	Norbrook Laboratories, Ltd.
Penicillin G procaine	RX	14 days	Norocillin® (penicillin G procaine injectable suspension)	Norbrook Laboratories, Ltd.
Plasmid DNA	Rx	21 days	Zelnate	Elanco Animal Health
Pradofloxacin	Rx	4 days	Pradalex™	Elanco Animal Health
Selenium (sodium selenite) and Vitamin E	Rx	30 days	BO-SE®	Merck Animal Health
	Rx	30 days	MU-SE®	Merck Animal Health
Spectinomycin sulfate	RX	11 days	SpectoGard Sterile Solution	Bimeda, Inc
Sulfadimethoxine	Rx	5 days	Sulfamed Injection	Bimeda, Inc.
Tildipirosin	Rx	21 days	Zuprevo 18%®	Merck Animal Health

NOTES

- The term non-lactating cattle is defined as dairy bulls, dairy calves, and replacement heifers. Read label indications carefully. Some products are not approved for non-ruminating calves and female dairy cattle 20 months of age and older. Some products cannot be used with veal calves. Carefully consult the labels.
- Ivermectin is not approved for female dairy cattle of breeding age.

FDA-APPROVED DRUGS FOR INJECTABLE USE

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Tilmicosin phosphate	Rx	42 days	Micotil Injection	Elanco Animal Health
Tulathromycin	Rx	18 days	Macrosyn	Bimeda, Inc.
	Rx	18 days	Increxxa	Elanco Animal Health
	Rx	18 days	Arovyn™	Merck Animal Health
	Rx	18 days	Tulieve® (tulathromycin injection)	Norbrook Laboratories, Ltd.
	Rx	22 days	DRAXXIN 25®	Zoetis, Inc.
	Rx	18 days	DRAXXIN®	Zoetis, Inc.
	Rx	18 days	DRAXXIN®KP	Zoetis, Inc.
Tylosin	Rx	21 days	BiloVet Injection	Bimeda, Inc.
	OTC	21 days	Tylan Injection 50/200	Elanco Animal Health

FDA-APPROVED DRUGS FOR INTRAMAMMARY USE

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MILK WITHHOLDING TIME	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Bismuth subnitrate	OTC	None	None	ShutOut®	Merck Animal Health
Ceftiofur hydrochloride	Rx	0 day milk withdrawal if 30 day dry period	16 days	SPECTRAMAST® DC	Zoetis, Inc.
Cephapirin (benzathine)	Rx	72 hours	42 days	Tomorrow® Infusion	Boehringer Ingelheim Vetmedica, Inc.
Cloxacillin (benzathine)	Rx	0 day milk withdrawal if 30 day dry period	30 days	Dry-Clox®	Boehringer Ingelheim Vetmedica, Inc.
	Rx	0 day milk withdrawal if 28 day dry period	28 days	Orbenin-DC™	Merck Animal Health

FDA-APPROVED DRUGS FOR ORAL USE

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Albendazole	OTC	27 days	Valbazen® Suspension	Zoetis, Inc.
Amprolium	OTC	1 day	AmproMed for Calves	Bimeda, Inc.
Chlortetracycline hydrochloride	Rx	1 day	Pennchlor® 64 Soluble Powder	Pharmgate Animal Health
Citiric Acid	OTC	None	Re-Sorb® Powder	Phibro Animal Health
	OTC	None	Re-Sorb® Powder	Zoetis, Inc.
Decoquinate	OTC	None	Deccox-M	Phibro Animal Health
Dextrose	OTC	None	Re-Sorb® Powder	Phibro Animal Health
	OTC	None	Re-Sorb® Powder	Zoetis, Inc.
Fenbendazole	OTC	8 days	Safe-Guard 10% Paste	Merck Animal Health
	OTC	8 days	Safe-Guard 10% Suspension	Merck Animal Health
	Rx	8 days	Panacur 10% Suspension	Merck Animal Health
	OTC	8 days	Defendazole™ (fenbendazole) Oral Dewormer	Norbrook Laboratories, Ltd.
Glycine	OTC	None	Re-Sorb® Powder	Phibro Animal Health
	OTC	None	Re-Sorb® Powder	Zoetis, Inc.
Levamisole hydrochloride	OTC	2 days	LevaMed	Bimeda, Inc.
Neomycin sulfate	Rx	1 day	NeoMed 325 Soluble Powder	Bimeda, Inc.
Oxfendazole	OTC	7 days	Synanthic® Bovine Dewormer Suspensions, 22.5 % and 9.06%	Boehringer Ingelheim Vetmedica, Inc.
Oxytetracycline hydrochloride	RX	5 days	Tetroxy 25	Bimeda, Inc
	RX	5 days	Tetroxy 343	Bimeda, Inc
	Rx	5 days	Pennox 343® Soluble Powder	Pharmgate Animal Health
	Rx	7 days	Terramycin® Scours Tablets	Zoetis, Inc.

NOTES The term non-lactating cattle is defined as dairy bulls, dairy calves, and replacement heifers. Read label indications carefully. Some products are not approved for non-ruminating calves and female dairy cattle 20 months of age and older. Some products cannot be used with veal calves. Carefully consult the labels.

FDA-APPROVED DRUGS FOR ORAL USE

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Potassium citrate	OTC	None	Re-Sorb® Powder	Phibro Animal Health
	OTC	None	Re-Sorb® Powder	Zoetis, Inc.
Potassium dihydrogen phosphate	OTC	None	Re-Sorb® Powder	Phibro Animal Health
	OTC	None	Re-Sorb® Powder	Zoetis, Inc.
Sodium chloride	OTC	None	Re-Sorb® Powder	Phibro Animal Health
	OTC	None	Re-Sorb® Powder	Zoetis, Inc.
Sulfamethazine	Rx	12 days	Sustain III - Calf	Bimeda, Inc.
	Rx	12 days	Sustain III - Cattle	Bimeda, Inc.
Sulfamethazine (sodium)	Rx	10 days	SMZ-Med	Bimeda, Inc.
Tetrachlorvinphos	OTC	None	Rabon 7.76 Oral Larvicide	Elanco Animal Health
Tetracycline hydrochloride	Rx	5 days	TetraMed 324 HCA	Bimeda, Inc.

FDA-APPROVED DRUGS FOR TOPICAL USE

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Cyfluthrin	OTC	None	CyLence	Elanco Animal Health
Diflubenzuron & permethrin	OTC	None	Clean-Up II	Elanco Animal Health
Doramectin	OTC	45 days	Doracide	Bimeda, Inc
	OTC	45 days	Dectomax® Pour-On	Zoetis, Inc.
Eprinomectin	OTC	None	Eprimectin Pour-On	Bimeda, Inc
	OTC	None	Eprizero® (eprinomectin) Pour-On for Beef and Dairy Cattle	Norbrook Laboratories, Ltd.

FDA-APPROVED DRUGS FOR TOPICAL USE

Non-Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Flunixin meglumine	Rx	8 days	Banamine® Transdermal Pour-On	Merck Animal Health
Ivermectin	OTC	48 days	Bimectin Pour-On	Bimeda, Inc
	OTC	48 days	IVOMEC (Ivermectin) Pour-On	Boehringer Ingelheim Animal Health, USA Inc.
	OTC	48 days	Noromectin® Pour-On (ivermectin topical solution) for Cattle	Norbrook Laboratories, Ltd.
Lambda-cyhalothrin and piperonyl butoxide	OTC	None	ULTRA SABER® POUR-ON INSECTICIDE	Merck Animal Health
Moxidectin	OTC	None	Cydectin Pour-On	Elanco Animal Health
Oxytetracycline hydrochloride/ Polymyxin B sulfate	Rx	None	Terramycin® Ophthalmic Ointment with Polymyxin	Zoetis, Inc.
Permethrin and piperonyl butoxide	OTC	None	Permectrin CDS Pour-On	Elanco Animal Health
	OTC	None	ULTRA BOSS® POUR-ON INSECTICIDE	Merck Animal Health

NOTES

- The term non-lactating cattle is defined as dairy bulls, dairy calves, and replacement heifers. Read label indications carefully. Some products are not approved for non-ruminating calves and female dairy cattle 20 months of age and older. Some products cannot be used with veal calves. Carefully consult the labels.

FOR LACTATING CATTLE

FDA-APPROVED DRUGS FOR INJECTABLE USE

Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MILK WITHHOLDING TIME	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Ampicillin trihydrate	Rx	48 hours	6 days	Polyflex®	Boehringer Ingelheim Vetmedica, Inc.
Ceftiofur crystalline-free acid	Rx	None	13 days	EXCEDE®	Zoetis, Inc.
Ceftiofur Hydrochloride	Rx	None	3 days	Cefenil® RTU (ceftiofur hydrochloride sterile suspension)	Norbrook Laboratories, Ltd.
	Rx	None	4 days	EXCENEL® RTU EZ	Zoetis, Inc.
Ceftiofur sodium	Rx	None	4 days	Naxcel® Sterile Powder	Zoetis, Inc.
Cloprostenol sodium	Rx	None	None	SynchSure	Boehringer Ingelheim Animal Health, USA Inc.
	Rx	None	None	Estrumate®	Merck Animal Health
Dexamethasone	Rx	None	None	Dexium	Bimeda, Inc.
	Rx	None	None	Dexamethasone Solution	Clipper Distributing Co., LLC
Dinoprost tromethamine	Rx	None	None	ProstaMate	Bimeda, Inc.
	Rx	None	None	Lutalyse® HighCon Injection	Zoetis, Inc.
	Rx	None	None	Lutalyse® Sterile Solution	Zoetis, Inc.
Flunixin meglumine	Rx	36 hours	4 days	Flunazine	Bimeda, Inc.
	Rx	36 hours	4 days	Banamine®	Merck Animal Health
	Rx	36 hours	4 days	Flunixin Injection (flunixin meglumine injection)	Norbrook Laboratories, Ltd.
Gonadorelin diacetate tetrahydrate	Rx	None	None	OvaCyst	Bimeda, Inc.
	Rx	None	None	Cystorelin Injectable	Boehringer Ingelheim Animal Health, USA Inc.
	Rx	None	None	Fertagyl®	Merck Animal Health
Gonadorelin hydrochloride	Rx	None	None	Factrel®	Zoetis, Inc.
Gonadotropin (chorionic)	Rx	None	None	Chorulon®	Merck Animal Health

FDA-APPROVED DRUGS FOR INJECTABLE USE

Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MILK WITHHOLDING TIME	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Oxytetracycline	Rx	96 hours	28 days	Bio-Mycin® 200	Boehringer Ingelheim Vetmedica, Inc.
	RX	96 hours	28 days	Oxytetracycline Injection 200 (oxytetracycline injection)	Norbrook Laboratories, Ltd.
Oxytocin	Rx	None	None	Oxytocin Injection	Bimeda, Inc.
Penicillin G procaine	RX	48 hours	14 days	Norocillin® (penicillin G procaine injectable suspension)	Norbrook Laboratories, Ltd.
Sulfadimethoxine	Rx	60 hours	5 days	Sulfamed Injection	Bimeda, Inc.

FDA-APPROVED DRUGS FOR TYPE A MEDICATED ARTICLE USE*

Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MILK WITHHOLDING TIME	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Monensin (sodium)	OTC	None	None	Rumensin 90	Elanco Animal Health

FDA-APPROVED DRUGS FOR INTRAMAMMARY USE

Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MILK WITHHOLDING TIME	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Amoxicillin trihydrate	Rx	60 hours	12 days	Amoxi-Mast®	Merck Animal Health
Ceftiofur hydrochloride	Rx	72 hours	2 days	SPECTRAMAST™ LC	Zoetis, Inc.

NOTES ✱ Per changes to FDA regulatory definitions, previously referred to as feed additives, these products are now being referred to as "Type A Medicated Article."

FDA-APPROVED DRUGS FOR INTRAMAMMARY USE

Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MILK WITHHOLDING TIME	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Cephapirin (sodium)	Rx	96 hours	4 days	Today®	Boehringer Ingelheim Vetmedica, Inc.
Hetacillin (potassium)	Rx	72 hours	10 days	PolyMast®	Boehringer Ingelheim Vetmedica, Inc.

FDA-APPROVED DRUGS FOR INTRAVAGINAL USE

Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MILK WITHHOLDING TIME	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Progesterone	OTC	None	None	EAZI-BreedTM CIDR® Cattle Insert	Zoetis, Inc.

FDA-APPROVED DRUGS FOR ORAL USE

Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MILK WITHHOLDING TIME	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Fenbendazole	OTC	96 hours	8 days	Safe-Guard 10% Paste	Merck Animal Health
	OTC	48 hours	8 days	Safe-Guard 10% Suspension	Merck Animal Health
	Rx	48 hours	8 days	Panacur 10% Suspension	Merck Animal Health
	OTC	48 Hours	8 days	Defendazole™ (fenbendazole) Oral Dewormer	Norbrook Laboratories, Ltd.
Poloxalene	OTC	None	None	Bloat Guard® Top Dressing	Phibro Animal Health
	OTC	None	None	TheraBloat® Drench Concentrate	Zoetis, Inc.

FDA-APPROVED DRUGS FOR ORAL USE

Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MILK WITHHOLDING TIME	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Sulfadimethoxine	Rx	60 hours	7 days	ALBON® Bolus (5gram)	Zoetis, Inc.
Tetrachlorvinphos	OTC	None	None	Rabon 7.76 Oral Larvicide	Elanco Animal Health

FDA-APPROVED DRUGS FOR TOPICAL USE

Lactating Cattle

ACTIVE INGREDIENT	DRUG TYPE	MILK WITHHOLDING TIME	MEAT WITHHOLDING TIME	PRODUCT NAME	MANUFACTURER/MARKETER
Cyfluthrin	OTC	None	None	CyLence	Elanco Animal Health
Diflubenzuron & permethrin	OTC	None	None	Clean-Up II	Elanco Animal Health
Eprinomectin	OTC	None	None	Eprimectin Pour-On	Bimeda, Inc
	OTC	None	None	EPRINEX Pour-On for Beef & Dairy Cattle	Boehringer Ingelheim Animal Health, USA Inc.
	OTC	None	None	Eprizero® (eprinomectin) Pour-On for Beef and Dairy Cattle	Norbrook Laboratories, Ltd.
Flunixin meglumine	Rx	48 hours	8 days	Banamine® Transdermal Pour-On	Merck Animal Health
Moxidectin	OTC	None	None	Cydectin Pour on	Elanco Animal Health
Oxytetracycline hydrochloride/ Polymyxin B sulfate	Rx	None	None	Terramycin® Ophthalmic Ointment with Polymyxin	Zoetis, Inc.
Permethrin and piperonyl butoxide	OTC	None	None	Permectrin CDS Pour-On	Elanco Animal Health
	OTC	Not specifically stated	Not specifically stated	ULTRA BOSS® POUR-ON INSECTICIDE	Merck Animal Health

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zoetis Milk Quality

TESTS BY RESIDUES COLLECTED

SERUM & URINE SCREENING TESTS

Screening Tests Available as of January 2026

Can be used in any dairy animal for detecting drug residues in serum and urine. ×

RESIDUES DETECTED	TEST NAME	SPONSOR	SPECIMEN	SENSITIVITY (PPB)
Amoxicillin	Charm II Beta-lactam Test	Charm Sciences, Inc.	Serum	500
	Charm II Beta-lactam Test	Charm Sciences, Inc.	Urine	2000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	100
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	100
	Charm SL® Beta-lactam Test for Urine	Charm Sciences, Inc.	Urine	40
Ampicillin	Charm II Beta-lactam Test	Charm Sciences, Inc.	Serum	200
	Charm II Beta-lactam Test	Charm Sciences, Inc.	Urine	800
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	100
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	100
	Charm SL® Beta-lactam Test for Urine	Charm Sciences, Inc.	Urine	55
Ceftiofur	Charm II Beta-lactam Test	Charm Sciences, Inc.	Serum	500
	Charm II Beta-lactam Test	Charm Sciences, Inc.	Urine	2000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	1000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	1000
	Charm SL® Beta-lactam Test for Urine	Charm Sciences, Inc.	Urine	300
Cephalexin	Charm II Beta-lactam Test	Charm Sciences, Inc.	Serum	500
	Charm II Beta-lactam Test	Charm Sciences, Inc.	Urine	2000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	1000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	1000
	Charm SL® Beta-lactam Test for Urine	Charm Sciences, Inc.	Urine	300
	Charm SL® Beta-lactam Test for Urine	Charm Sciences, Inc.	Urine	1000

NOTES

× Inclusion of product names and associated information does not constitute an endorsement by the NMPF. Unless otherwise noted, all information contained herein was provided by the product's sponsor and no further attempts were made to validate or corroborate the sponsor's information. Neither the AVMA, NMPF, FDA, nor FARAD assumes any responsibility for penalties which may result from the use of this table or any of the products listed herein.

SERUM & URINE SCREENING TESTS

Screening Tests Available as of January 2026

RESIDUES DETECTED	TEST NAME	SPONSOR	SPECIMEN	SENSITIVITY (PPB)
Cephapirin	Charm II Beta-lactam Test	Charm Sciences, Inc.	Serum	200
	Charm II Beta-lactam Test	Charm Sciences, Inc.	Urine	800
Cephapirin	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	100
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	100
	Charm SL® Beta-lactam Test for Urine	Charm Sciences, Inc.	Urine	85
Chloramphenicol Ð	Charm II Amphenicol Test	Charm Sciences, Inc.	Serum	10
	Charm II Amphenicol Test	Charm Sciences, Inc.	Urine	10
	Charm II Chloramphenicol Test	Charm Sciences, Inc.	Serum	0.3
	Charm II Chloramphenicol Test	Charm Sciences, Inc.	Urine	10
Chlortetracycline	Charm II Tetracycline Test	Charm Sciences, Inc.	Serum	200
	Charm II Tetracycline Test	Charm Sciences, Inc.	Urine	3000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	10000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	10000
Cloxacillin	Charm II Beta-lactam Test	Charm Sciences, Inc.	Serum	2500
	Charm II Beta-lactam Test	Charm Sciences, Inc.	Urine	10000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	500
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	500
	Charm SL® Beta-lactam Test for Urine	Charm Sciences, Inc.	Urine	300
Dihydrostreptomycin	Charm II Streptomycin Test	Charm Sciences, Inc.	Serum	100
	Charm II Streptomycin Test	Charm Sciences, Inc.	Urine	2000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	5000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	5000

SERUM & URINE SCREENING TESTS

Screening Tests Available as of January 2026

RESIDUES DETECTED	TEST NAME	SPONSOR	SPECIMEN	SENSITIVITY (PPB)
Erythromycin	Charm II Macrolide Test	Charm Sciences, Inc.	Serum	500
	Charm II Macrolide Test	Charm Sciences, Inc.	Urine	500
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	500
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	500
Florfenicol	Charm II Amphenicol Test	Charm Sciences, Inc.	Serum	400
	Charm II Amphenicol Test	Charm Sciences, Inc.	Urine	400
Gentamicin	Charm II Gentamicin and Neomycin Test	Charm Sciences, Inc.	Urine	2000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	600
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	600
	Charm II Gentamicin and Neomycin Test	Charm Sciences, Inc.	Serum	250
Hetacillin	Charm II Beta-lactam Test	Charm Sciences, Inc.	Serum	200
	Charm II Beta-lactam Test	Charm Sciences, Inc.	Urine	1000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	100
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	100
	Charm SL® Beta-lactam Test for Urine	Charm Sciences, Inc.	Urine	250
Kanamycin	Charm II Gentamicin and Neomycin Test	Charm Sciences, Inc.	Urine	2000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	5000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	5000
	Charm II Gentamicin and Neomycin Test	Charm Sciences, Inc.	Serum	>2000
Lincomycin	Charm II Macrolide Test	Charm Sciences, Inc.	Serum	2000
	Charm II Macrolide Test	Charm Sciences, Inc.	Urine	2000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	2000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	2000

SERUM & URINE SCREENING TESTS

Screening Tests Available as of January 2026

RESIDUES DETECTED	TEST NAME	SPONSOR	SPECIMEN	SENSITIVITY (PPB)
Neomycin	Charm II Gentamicin and Neomycin Test	Charm Sciences, Inc.	Serum	50
	Charm II Gentamicin and Neomycin Test	Charm Sciences, Inc.	Urine	10000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	1000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	1000
Oxacillin	Charm II Beta-lactam Test	Charm Sciences, Inc.	Serum	2500
	Charm II Beta-lactam Test	Charm Sciences, Inc.	Urine	10000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	1000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	1000
	Charm SL® Beta-lactam Test for Urine	Charm Sciences, Inc.	Urine	300
Oxytetracycline	Charm II Tetracycline Test	Charm Sciences, Inc.	Serum	100
	Charm II Tetracycline Test	Charm Sciences, Inc.	Urine	2500
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	3500
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	3500
Penicillin	Charm II Beta-lactam Test	Charm Sciences, Inc.	Serum	200
	Charm II Beta-lactam Test	Charm Sciences, Inc.	Urine	800
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	30
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	30
	Charm SL® Beta-lactam Test for Urine	Charm Sciences, Inc.	Urine	25
Pirlimycin	Charm II Macrolide Test	Charm Sciences, Inc.	Serum	3000
	Charm II Macrolide Test	Charm Sciences, Inc.	Urine	3000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	1000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	1000
Streptomycin	Charm II Streptomycin Test	Charm Sciences, Inc.	Serum	100
	Charm II Streptomycin Test	Charm Sciences, Inc.	Urine	2000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	5000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	5000

SERUM & URINE SCREENING TESTS

Screening Tests Available as of January 2026

RESIDUES DETECTED	TEST NAME	SPONSOR	SPECIMEN	SENSITIVITY (PPB)
Sulfamethoxazole	Charm II Sulfonamide Test	Charm Sciences, Inc.	Serum	120
	Charm II Sulfonamide Test	Charm Sciences, Inc.	Urine	300
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	5000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	5000
Sulfanilamide	Charm II Sulfonamide Test	Charm Sciences, Inc.	Serum	1600
	Charm II Sulfonamide Test	Charm Sciences, Inc.	Urine	4000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	10000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	10000
Sulfapyridine	Charm II Sulfonamide Test	Charm Sciences, Inc.	Serum	400
	Charm II Sulfonamide Test	Charm Sciences, Inc.	Urine	1000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	5000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	5000
Sulfaquinoxaline	Charm II Sulfonamide Test	Charm Sciences, Inc.	Serum	150
	Charm II Sulfonamide Test	Charm Sciences, Inc.	Urine	500
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	5000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	5000
Sulfathiazole	Charm II Sulfonamide Test	Charm Sciences, Inc.	Serum	300
	Charm II Sulfonamide Test	Charm Sciences, Inc.	Urine	1000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	250
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	2500
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	5000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	600
Tetracycline	Charm II Tetracycline Test	Charm Sciences, Inc.	Serum	40
	Charm II Tetracycline Test	Charm Sciences, Inc.	Urine	600
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	10000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	10000

SERUM & URINE SCREENING TESTS

Screening Tests Available as of January 2026

RESIDUES DETECTED	TEST NAME	SPONSOR	SPECIMEN	SENSITIVITY (PPB)
Tilmicosin	Charm II Macrolide Test	Charm Sciences, Inc.	Serum	250
	Charm II Macrolide Test	Charm Sciences, Inc.	Urine	250
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	1000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	1000
Tulathromycin	Charm II Macrolide Test	Charm Sciences, Inc.	Serum	500
	Charm II Macrolide Test	Charm Sciences, Inc.	Urine	500
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	500
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	500
Tylosin	Charm II Macrolide Test	Charm Sciences, Inc.	Serum	2000
	Charm II Macrolide Test	Charm Sciences, Inc.	Urine	2000
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Serum	200
	Charm Kidney Inhibition Swab Test	Charm Sciences, Inc.	Urine	200

MILK SCREENING TESTS

Screening Tests Available as of January 2026 for Detecting Residues in Bulk Tank Milk

Not all of the tests listed below **have been evaluated by FDA and accepted by the National Conference on Interstate Milk Shipments (NCIMS)** for residue testing. Refer to M-a-85 and M-1-92-11 (latest revisions) or the other memorandums in the FDA Grade "A" Milk Search (GAMS) System. These tests are believed to be reliable indicators of antibiotic contamination in milk and should be viewed as tools to screen bulk tank milk.

RESIDUES DETECTED	TOLERANCE	TEST NAME	SPONSOR	SENSITIVITY (PPB)
Amoxicillin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	4.6
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	7.7
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	2.5
		Delvotest T	DSM Food Specialties USA, Inc.	2
	10	New SNAP Beta-lactam (Visual)	IDEXX Laboratories, Inc.	6.9
	10	New SNAP Beta-lactam*	IDEXX Laboratories, Inc.	7.3
	10	SNAP Beta-Lactam ST	IDEXX Laboratories, Inc.	4
	10	SNAP Beta-Lactam ST Plus	IDEXX Laboratories, Inc.	2
	10	SNAP TRIO JAPAN	IDEXX Laboratories, Inc.	5
	10	SNAPduo ST Plus	IDEXX Laboratories, Inc.	3
Ampicillin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	4.0
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	5.1
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	3.0
		Delvotest T	DSM Food Specialties USA, Inc.	2
	10	New SNAP Beta-lactam (Visual)	IDEXX Laboratories, Inc.	6.2
	10	New SNAP Beta-lactam*	IDEXX Laboratories, Inc.	5.8
	10	SNAP Beta-Lactam ST	IDEXX Laboratories, Inc.	4
	10	SNAP Beta-Lactam ST Plus	IDEXX Laboratories, Inc.	4
	10	SNAP TRIO JAPAN	IDEXX Laboratories, Inc.	4
	10	SNAPduo ST Plus	IDEXX Laboratories, Inc.	4
Bacitractin		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	

MILK SCREENING TESTS

Screening Tests Available as of January 2026 for Detecting Residues in Bulk Tank Milk

RESIDUES DETECTED	TOLERANCE	TEST NAME	SPONSOR	SENSITIVITY (PPB)
Cefadroxil		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	100
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	100
Cefalonium		Delvotest T	DSM Food Specialties USA, Inc.	5
Cefazolin		Delvotest T	DSM Food Specialties USA, Inc.	3
Cefoperazone		Delvotest SP-NT	DSM Food Specialties USA, Inc.	30
		Delvotest T	DSM Food Specialties USA, Inc.	20
	None	SNAP Beta-Lactam ST	IDEXX Laboratories, Inc.	35
	None	SNAP Beta-Lactam ST Plus	IDEXX Laboratories, Inc.	20
	None	SNAPduo ST Plus	IDEXX Laboratories, Inc.	35
Cefquinome		Delvotest SP-NT	DSM Food Specialties USA, Inc.	65-75
		Delvotest T	DSM Food Specialties USA, Inc.	50-60
	None	SNAP Beta-Lactam ST	IDEXX Laboratories, Inc.	16
	None	SNAP Beta-Lactam ST Plus	IDEXX Laboratories, Inc.	12
	None	SNAPduo ST Plus	IDEXX Laboratories, Inc.	16
Ceftiofur		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	70
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	70
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	20
		Delvotest T	DSM Food Specialties USA, Inc.	20
	100	New SNAP Beta-Lactam*	IDEXX Laboratories, Inc.	12
	100	SNAP Beta-Lactam ST	IDEXX Laboratories, Inc.	50 - 80
	100	SNAP Beta-Lactam ST Plus	IDEXX Laboratories, Inc.	9
	100	SNAP TRIO JAPAN	IDEXX Laboratories, Inc.	20
	100	SNAPduo ST Plus	IDEXX Laboratories, Inc.	8

MILK SCREENING TESTS

Screening Tests Available as of January 2026 for Detecting Residues in Bulk Tank Milk

RESIDUES DETECTED	TOLERANCE	TEST NAME	SPONSOR	SENSITIVITY (PPB)
Cephalexin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	45
		Delvotest T	DSM Food Specialties USA, Inc.	30
	None	SNAP Beta-Lactam ST	IDEXX Laboratories, Inc.	>7500
Cephalexin	None	SNAP Beta-Lactam ST Plus	IDEXX Laboratories, Inc.	40
	None	SNAPduo ST Plus	IDEXX Laboratories, Inc.	30
Cephapirin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	8.2
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	7.0
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	5.8
		Delvotest T	DSM Food Specialties USA, Inc.	5
	20	New SNAP Beta-lactam (Visual)	IDEXX Laboratories, Inc.	11.9
	20	New SNAP Beta-lactam*	IDEXX Laboratories, Inc.	11.7
	20	SNAP Beta-Lactam ST	IDEXX Laboratories, Inc.	25 - 35
	20	SNAP Beta-Lactam ST Plus	IDEXX Laboratories, Inc.	25
	20	SNAP TRIO JAPAN	IDEXX Laboratories, Inc.	10
	20	SNAPduo ST Plus	IDEXX Laboratories, Inc.	30
Chloramphenicol		Delvotest SP-NT	DSM Food Specialties USA, Inc.	3000
		Delvotest T	DSM Food Specialties USA, Inc.	3500-4000
Chlortetracycline		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	250-300
		Delvotest T	DSM Food Specialties USA, Inc.	150
	300	SNAP Tetracycline	IDEXX Laboratories, Inc.	60
	300	SNAP Tetracycline (Dilution confirmation)	IDEXX Laboratories, Inc.	600
	300	SNAPduo ST Plus	IDEXX Laboratories, Inc.	40

MILK SCREENING TESTS

Screening Tests Available as of January 2026 for Detecting Residues in Bulk Tank Milk

RESIDUES DETECTED	TOLERANCE	TEST NAME	SPONSOR	SENSITIVITY (PPB)
Clavulanic acid		Delvotest T	DSM Food Specialties USA, Inc.	700-800
Cloxacillin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	50
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	50
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	12
		Delvotest T	DSM Food Specialties USA, Inc.	10
	10	New SNAP Beta-Lactam	IDEXX Laboratories, Inc.	50
	10	SNAP Beta-Lactam ST	IDEXX Laboratories, Inc.	6
	10	SNAP Beta-Lactam ST Plus	IDEXX Laboratories, Inc.	3
	10	SNAP TRIO JAPAN	IDEXX Laboratories, Inc.	6
	10	SNAPduo ST Plus	IDEXX Laboratories, Inc.	4
Dapsone		Delvotest SP-NT	DSM Food Specialties USA, Inc.	2
		Delvotest T	DSM Food Specialties USA, Inc.	10
Dicloxacillin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	50
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	50
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	
	None	New SNAP Beta-lactam	IDEXX Laboratories, Inc.	50
	None	SNAP Beta-Lactam ST	IDEXX Laboratories, Inc.	6
	None	SNAP Beta-Lactam ST Plus	IDEXX Laboratories, Inc.	4
	None	SNAP TRIO JAPAN	IDEXX Laboratories, Inc.	6
	None	SNAPduo ST Plus	IDEXX Laboratories, Inc.	4
Dihydrostreptomycin		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	700
		Delvotest T	DSM Food Specialties USA, Inc.	700-800
Doxycycline		Delvotest SP-NT	DSM Food Specialties USA, Inc.	120-150
		Delvotest T	DSM Food Specialties USA, Inc.	50
Enrofloxacin		Delvotest SP-NT	DSM Food Specialties USA, Inc.	

MILK SCREENING TESTS

Screening Tests Available as of January 2026 for Detecting Residues in Bulk Tank Milk

RESIDUES DETECTED	TOLERANCE	TEST NAME	SPONSOR	SENSITIVITY (PPB)
Erythromycin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	90
		Delvotest T	DSM Food Specialties USA, Inc.	160-200
Gentamicin		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	90
		Delvotest T	DSM Food Specialties USA, Inc.	100
	30	SNAP Gentamicin	IDEXX Laboratories, Inc.	30
Gentamycin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
Hetacillin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
Kanamycin		Delvotest SP-NT	DSM Food Specialties USA, Inc.	1700
Lincomycin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	160-170
		Delvotest T	DSM Food Specialties USA, Inc.	220-275
Nafcillin		Delvotest T	DSM Food Specialties USA, Inc.	3
Neomycin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	115-190
		Delvotest T	DSM Food Specialties USA, Inc.	140
Novobiocin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	
Oxacillin		Delvotest SP-NT	DSM Food Specialties USA, Inc.	3-4
		Delvotest T	DSM Food Specialties USA, Inc.	3

MILK SCREENING TESTS

Screening Tests Available as of January 2026 for Detecting Residues in Bulk Tank Milk

RESIDUES DETECTED	TOLERANCE	TEST NAME	SPONSOR	SENSITIVITY (PPB)
Oxytetracycline		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	250-300
		Delvotest T	DSM Food Specialties USA, Inc.	80-100
	300	SNAP Tetracycline	IDEXX Laboratories, Inc.	18
	300	SNAP Tetracycline (Dilution confirmation)	IDEXX Laboratories, Inc.	180
	300	SNAP TRIO JAPAN	IDEXX Laboratories, Inc.	60
	300	SNAPduo ST Plus	IDEXX Laboratories, Inc.	18
Penicillin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	2.1
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	3.1
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	1.5
Penicillin		Delvotest T	DSM Food Specialties USA, Inc.	1 - 3
	5	New SNAP Beta-lactam	IDEXX Laboratories, Inc.	3
	5	New SNAP Beta-lactam (Visual)	IDEXX Laboratories, Inc.	3.1
	5	SNAP Beta-Lactam ST	IDEXX Laboratories, Inc.	3
	5	SNAP Beta-Lactam ST Plus	IDEXX Laboratories, Inc.	2
	5	SNAP TRIO JAPAN	IDEXX Laboratories, Inc.	3
	5	SNAPduo ST Plus	IDEXX Laboratories, Inc.	2
Pirlimycin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	
		Delvotest T	DSM Food Specialties USA, Inc.	300
	400	SNAP TRIO JAPAN	IDEXX Laboratories, Inc.	80
Polymixin B		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
Rifaximin		Delvotest SP-NT	DSM Food Specialties USA, Inc.	50-60
		Delvotest T	DSM Food Specialties USA, Inc.	40

MILK SCREENING TESTS

Screening Tests Available as of January 2026 for Detecting Residues in Bulk Tank Milk

RESIDUES DETECTED	TOLERANCE	TEST NAME	SPONSOR	SENSITIVITY (PPB)
Spectinomycin		Delvotest SP-NT	DSM Food Specialties USA, Inc.	2000
Spiramycin		Delvotest T	DSM Food Specialties USA, Inc.	1500-2000
Streptomycin		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	
		Delvotest T	DSM Food Specialties USA, Inc.	700-1000
Sulathiazole		Delvotest T	DSM Food Specialties USA, Inc.	30
Sulfadiazine		Delvotest SP-NT	DSM Food Specialties USA, Inc.	50-65
		Delvotest T	DSM Food Specialties USA, Inc.	50-55
Sulfadimethoxine		Delvotest SP-NT	DSM Food Specialties USA, Inc.	50
		Delvotest T	DSM Food Specialties USA, Inc.	40
Sulfadoxine		Delvotest SP-NT	DSM Food Specialties USA, Inc.	
		Delvotest T	DSM Food Specialties USA, Inc.	80
Sulfamerazine		Delvotest SP-NT	DSM Food Specialties USA, Inc.	
Sulfamethazine		Delvotest SP-NT	DSM Food Specialties USA, Inc.	75-100
		Delvotest T	DSM Food Specialties USA, Inc.	125
Sulfamethizole		Delvotest SP-NT	DSM Food Specialties USA, Inc.	
Sulfanilamide		Delvotest SP-NT	DSM Food Specialties USA, Inc.	
Sulfathiazole		Delvotest SP-NT	DSM Food Specialties USA, Inc.	40
Tetracycline		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	270-300
		Delvotest T	DSM Food Specialties USA, Inc.	80-100
	300	SNAP Tetracycline	IDEXX Laboratories, Inc.	30
	300	SNAP Tetracycline (Dilution confirmation)	IDEXX Laboratories, Inc.	292
	300	SNAP TRIO JAPAN	IDEXX Laboratories, Inc.	80
	300	SNAPduo ST Plus	IDEXX Laboratories, Inc.	16

MILK SCREENING TESTS

Screening Tests Available as of January 2026 for Detecting Residues in Bulk Tank Milk

RESIDUES DETECTED	TOLERANCE	TEST NAME	SPONSOR	SENSITIVITY (PPB)
Tilmicosin		Delvotest SP-NT	DSM Food Specialties USA, Inc.	30
		Delvotest T	DSM Food Specialties USA, Inc.	60-100
Tircarcillin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	50
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	50
Trimethoprim		Delvotest SP-NT	DSM Food Specialties USA, Inc.	160
		Delvotest T	DSM Food Specialties USA, Inc.	110-120
Tylosin		Delvotest P 5 Pack	DSM Food Specialties USA, Inc.	
		Delvotest P/Delvotest P Mini	DSM Food Specialties USA, Inc.	
		Delvotest SP-NT	DSM Food Specialties USA, Inc.	35-40
		Delvotest T	DSM Food Specialties USA, Inc.	35

MILK SCREENING TESTS

Screening Tests Available as of January 2026 for Detecting Residues in Bulk Tank Milk

Tests listed below **have been evaluated by FDA and accepted by the National Conference on Interstate Milk Shipments (NCIMS)** for residue testing. Refer to M-a-85 or M-1-92-11 (latest revisions) for current listing. These tests are believed to be reliable indicators of antibiotic contamination in milk and should be viewed as tools to screen bulk tank milk.

RESIDUES DETECTED	TOLERANCE
IDEXX SNAP Beta-Lactam ST	Amoxicillin, Ampicillin, Ceftiofur, Cloxacillin, Penicillin
IDEXX SNAP Beta-Lactam ST Plus	Amoxicillin, Ampicillin, Ceftiofur, Cloxacillin, Penicillin
IDEXX SNAP Gentamicin Test	Gentamicin
IDEXX SNAP Tetracycline Test	Chlortetracycline, Oxytetracycline, Tetracycline
IDEXX SNAPduo ST Plus	Amoxicillin, Ampicillin, Ceftiofur, Chlortetracycline, Cloxacillin, Oxytetracycline, Penicillin, Tetracycline

Glossary

DISTRESS:

State in which an animal cannot escape or adapt to internal or external stressors, resulting in negative effects on well-being. Distress occurs when livestock are injured, sick, or in pain.

DRY COWS:

Non-lactating pregnant cows from the end of lactation until the next parturition. A pregnant cow is generally dry or non-lactating for 40 to 60 days before the next calving.

HERD HEALTH PLAN:

An animal health management system developed with a veterinarian to prevent, diagnose, control, and treat disease or injury of all dairy cattle on a farm.

Find the Herd Health Plan Veterinarian Review Form here or visit nationaldairyfarm.com.

LACTATING DAIRY COW:

Any dairy breed bovine female that is over 20 months of age.

LICENSED VETERINARIAN:

Veterinarian licensed by one or more state boards of veterinary medical examiners to practice veterinary medicine within the respective state(s).

PAIN:

An unpleasant physical sensation occurring in varying degrees of severity due to injury, disease, or medical or management procedure.

PROTOCOLS:

Written processes that may include instructions provided by the Veterinarian of Record (VOR) for the management of dairy cows in various situations and under various conditions.

Find protocol templates here or visit nationaldairyfarm.com.

VETERINARIAN-CLIENT-PATIENT RELATIONSHIP (VCPR):

The VCPR is the basis for veterinary care. To establish such a relationship the following conditions must be satisfied:

1. The licensed veterinarian has assumed the responsibility for making medical judgments regarding the health of the patient(s) and the need for medical therapy and has instructed the client on a course of therapy appropriate to the circumstance.
2. There is sufficient knowledge of the patient(s) by the veterinarian to initiate at least a general or preliminary diagnosis of the medical condition(s) of the patient(s).
3. The client has agreed to follow the licensed veterinarian's recommendations.
4. The licensed veterinarian is readily available for follow-up evaluation or has arranged for:
    - Emergency or urgent care coverage, or
    - Continuing care and treatment has been designated by the veterinarian with the prior relationship to a licensed veterinarian who has access to the patient's medical records and/or who can provide reasonable and appropriate medical care.
5. The veterinarian provides oversight of treatment, compliance, and outcome.
6. Such a relationship can exist only when the veterinarian has performed a timely physical examination of the patient(s) or is personally acquainted with the keeping and care of the patient(s) by virtue of medically appropriate and timely visits to the operation where the patient(s) is(are) kept, or both.
7. Patient records are maintained.

Both the licensed veterinarian and the client have the right to establish or decline a VCPR within the guidelines set forth in the AVMA Principles of Veterinary Medical Ethics.

A licensed veterinarian who in good faith engages in the practice of veterinary medicine by rendering or attempting to render emergency or urgent care to a patient when a client cannot be identified, and a VCPR is not established, should not be subject to penalty based solely on the veterinarian's inability to establish a VCPR.

VETERINARIAN OF RECORD (VOR):

The VOR is the responsible veterinarian for providing appropriate and timely oversight of drug use on the farm. Such oversight is a critical component of establishing, maintaining and validating a VCPR. This oversight should include but may not be limited to establishing treatment protocols, training personnel, reviewing treatment records, monitoring drug inventories, and ensuring appropriate labeling of drugs.

WRITTEN PROTOCOL:

A document that provides specific instructions to cow-side personnel for performing a single, specific task. As a training tool, written protocols improve communication and work consistency.

Screen Testing Contact Information

COMPANIES MARKETING DRUG RESIDUE TESTS

Charm Sciences, Inc.

659 Andover Street
Lawrence, MA 01843
800-343-2170

info@charm.com
charm.com

IDEXX Laboratories, Inc.

1 Idexx Drive
Westbrook, ME 04092
800-548-9997

LPDCS@idexx.com
idexx.com/lpd

DSM Food Specialties USA, Inc.

620 Progress Avenue
Waukesha, WI 53187
262-547-5531

Orders.FoodandBeverageNA@dsm.com
delvotest.com

National Dairy Farm Program

2107 Wilson Blvd., Suite 600
Arlington, VA 22201
703-243-6111

dairyfarm@nmpf.org
nationaldairyfarm.com

Drug Company Contact Information

Bimeda, Inc.

One Tower Ln., Suite 2250
Oakbrook Terrace, IL 60181
888-524-6332

US-Info@Bimeda.com
bimedaus.com

Boehringer Ingelheim Animal Health, USA Inc.

3239 Satellite Blvd.
Duluth, GA 30096
888-637-4251

bi-vetmedica.com

Clipper Distributing Co., LLC

1302 South 59th St.
St. Joseph, MO 64507
800-759-3644

info@clipperdist.com
clipperdist.com

Elanco Animal Health

1500 Innovation Way
Greenfield, IN 46140
877-352-6261

elanco.com

Merck Animal Health

10488 South 136th St.
Omaha, NE 68138
800-211-3573

uslivestockpv@merck.com
merck-animal-health-usa.com

Norbrook® Inc. USA

9733 Loiret Blvd.
Lenexa, KS 66219
866-591-5777

norbrook.com/us/contact

Pharmgate Animal Health, LLC

1800 Sir Tyler Drive
Wilmington, NC 28405
800-380-6099

customerservice@pharmgate.com
pharmgate.com

Phibro Animal Health

Glenpointe Centre East 3rd Floor
300 Frank W. Burr Blvd., Ste. 21
Teaneck, NJ 07666
888-403-0074

Phibro.Dairy@pahc.com
pahc.com

Zoetis, Inc.

10 Sylvan Way
Parsippany, NJ 07054
888-963-8471

zoetisus.com
dairywellness.com

For more information visit nmpf.org
or contact us directly at info@nmpf.org

Learn more about the National Dairy FARM Program

NATIONALDAIRYFARM.COM

(703) 243-6111 | dairyfarm@nmpf.org