

Milk and Dairy Beef Drug Residue Prevention

Producer Manual of Best Management Practices

2011



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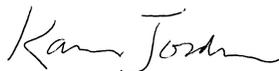
FORWARD

The goal of our nation's dairy farmers is to produce the best tasting and most wholesome milk possible. Our consumers demand the best from us and we meet the needs of our consumers every day. Day in and day out, we provide the best in animal husbandry and animal care practices for our animals. Continually, we evaluate our best management practices and disease prevention protocols to keep our animals healthy and comfortable. There are occasions where animals may get sick and need antibiotic therapy to overcome a specific disease challenge. As dairy producers, we strategically and judiciously use our antibiotic therapy to help an individual animal that has been threatened with a disease. We take this responsibility of judicious antibiotic use seriously and take many precautions with our antibiotic-treated animals so that their milk or meat does not enter the food supply.

The avoidance of milk and meat residues in the dairy industry takes an on-farm team effort that begins with the VCPR – the Veterinary-Client-Patient-Relationship. The dairy farm owner/manager /herdsman must work with the farm veterinarian to develop treatment protocols that address the correct use of antibiotics. Once a decision is made to use antibiotics then protocols must be in place to guide employees on the safe way to handle this animal to prevent an accidental milk or meat residue from occurring. Identification of treated animals and recorded antibiotic use are essential to prevent residues.

The newly revised Milk and Dairy Beef Drug Residue Prevention Manual is a concise review of appropriate antibiotic use in dairy animals. The Manual is a quick resource to review those antibiotics approved for dairy animals and can also be used as an educational tool and resource for the farm managers as they develop their on-farm best management practices necessary to avoid milk and meat residues. I encourage all dairy farmers to sit down with their veterinarian and all employees to review this manual because I think you will find the information useful, practical, and easily applied to your individual farms.

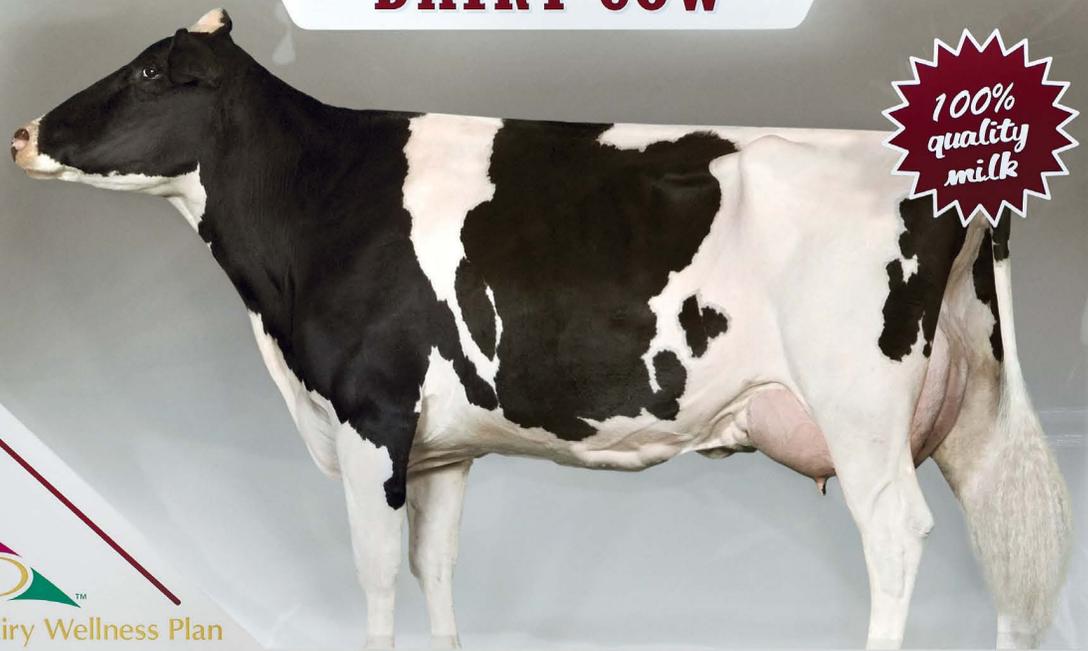
Sincerely,



Karen Jordan, DVM
Dairy Producer
Chair – NMPF Animal Health and Welfare Committee

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Milk and Dairy Beef Residue Prevention

INTRODUCTION

The dairy industry is committed to producing safe, abundant, and affordable milk and dairy beef of the highest quality. Healthy animals help make for safe food, and disease prevention is the key to keeping cows healthy. When dairy animals get sick and treatment is necessary, producers and veterinarians use drugs judiciously. Antibiotics should be used appropriately to prevent residues from occurring in milk or dairy beef sent to market. The marketing of milk or beef with antibiotic residues, even unintentionally, is illegal and can result in financial and criminal penalties.



ANIMAL DRUGS

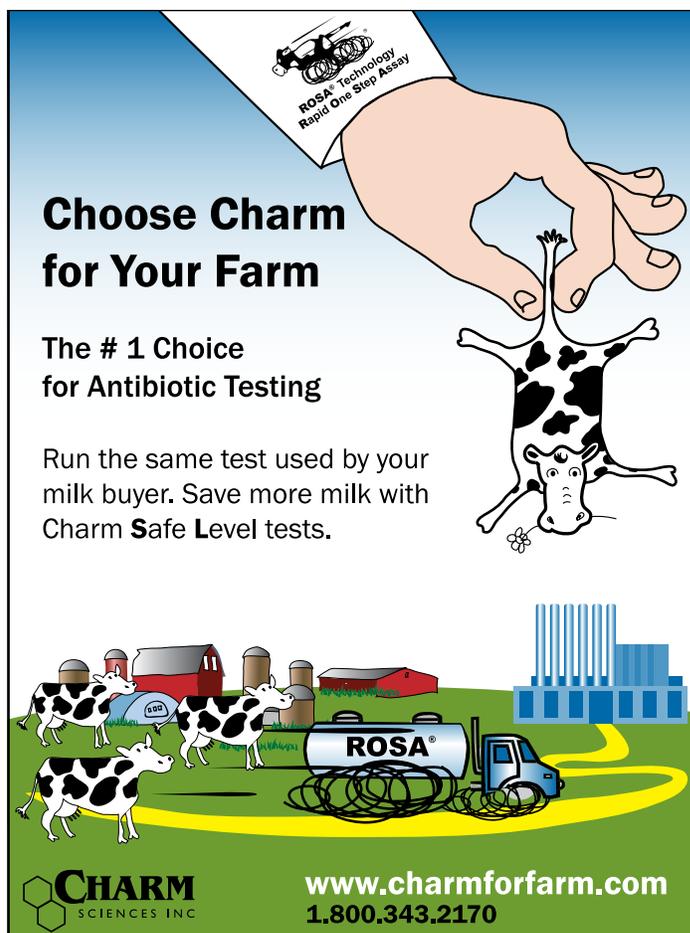
There are three classes of animal drugs: Over-the Counter (OTC), Prescription (RX), and Veterinary Feed Directive (VFD). OTC drugs can be sold by any person or establishment without a prescription of a veterinarian. Prescription drugs can only be sold to the public by a veterinarian or pharmacist, and only with the written prescription of a veterinarian. VFD is a drug intended for use in or on feed, which is limited by an approved application to use under the professional supervision of a licensed veterinarian. Currently, no VFD products are approved for use in cattle. One type of drug is an antibiotic. An antibiotic is a chemical substance or compound that kills or reduces the growth of susceptible bacteria.

Any use of a drug not specifically listed on the label is called “extra-label drug use” and is regulated by the Food and Drug Administration (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 recommended under the guidance of a veterinarian working in the context of a Veterinary-Client-Patient Relationship (VCPR).

Use of sustained-release antibiotics or prolonged efficacy antibiotics will result in extended withdrawal times. Residues can persist for weeks.

Examples of extra-label drug use:

1. Changing the **dose**, such as giving more penicillin than is listed on the label.
2. Changing the **route** of administration, such as giving Banamine intramuscularly (IM) or subcutaneously (SQ) instead of intravenously (IV).
3. Changing the **frequency** of use, such as giving Spectramast™ LC twice a day instead of once a day.
4. Giving a drug to a **different production class** of animal, such as using Nuflor® in a lactating dairy cow.
5. Giving a drug for an **indication (disease)** not listed on the label, such as using Excede® for diarrhea.
6. Changing the **withholding times**, such as not following milk withholding times for fresh cows after dry treatment administration.
7. Changing the **amount of drug** per injection site, such as altering the label recommendations.



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MILK ANTIBIOTIC RESIDUE TESTING

The Grade “A” Pasteurized Milk Ordinance (PMO), the rules which state regulatory agencies use to implement their Grade “A” milk programs, requires that all bulk milk tankers be sampled and analyzed for beta-lactam drug residues before the milk is processed. Additionally, screening of other drug residues is performed through a random sampling program, as determined by the Commissioner of the FDA. Customers may also require additional testing for quality assurance purposes.

Any tanker found positive for beta-lactam residue is rejected for human consumption. In 1996, of the 3,384,779 bulk milk pick-up tankers tested, only 0.104 percent tested positive.¹ From October 2007 to September 2008, 3,364,572 bulk milk pick-up tankers were tested by industry and state regulatory agencies and only 0.028 percent tested positive for antibiotic residues, a dramatic decrease from an already low-level of occurrence.²

MEAT ANTIBIOTIC RESIDUE TESTING

The United States Department of Agriculture (USDA) Food Safety Inspection Services (FSIS) conducts tests for chemicals—including antibiotics, sulfonamides, and various other drugs, pesticides and environmental chemicals—in meat, poultry, and egg products destined for human consumption. Scheduled sampling plans consist of the random sampling of tissue from healthy-appearing food animals. The development of scheduled sampling plans is a process that proceeds in the following manner: 1) determine which compounds are of food safety concern; 2) use algorithms to rank the selected compounds; 3) pair these compounds with appropriate production classes; and 4) establish the number of samples to be collected.³

FSIS maintains a “[Residue Violator List](#)” that 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. FSIS also maintains a “[Same Source Supplier- Residue Violator List](#)” that contains similar information to assist plant owners and

operators to identify residue history of livestock suppliers. Dairy beef from market cows and bob veal make up a large number of the animals on the “Residue Violator List”, though the numbers of positive animals represent a small percentage of the number of dairy animals processed every year.

The regulatory tolerances for milk and meat antibiotic residues vary depending on the type of drug used. A complete listing of the tolerances can be found in the FDA Green Book, which lists all approved animal drugs. The Green Book is available in searchable format online.

RESOURCES

- FDA Green Book, for tissue residue thresholds <http://www.fda.gov/AnimalVeterinary/Products/ApprovedAnimalDrugProducts/UCM042847>
- Food Animal Residue Avoidance & Depletion Program (FARAD) <http://www.farad.org/eldu/prohibit.html>
- FSIS Residue Testing <http://www.fsis.usda.gov/Science/Chemistry/index.asp>
- 2009 PMO - Drug Residue Testing and Farm Surveillance <http://www.fda.gov/downloads/Food/FoodSafety/Product-SpecificInformation/Milk-Safety/NationalConferenceonInterstateMilkShipmentsNCIMSMModelDocuments/UCM209789.pdf>

- 1 National Milk Drug Residue Data Base: Fiscal Year 1996 Annual Report. GLH, Incorporated. Lighthouse, FL. February 10, 1997. <http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/MilkSafety/Miscellaneous-MilkSafetyReferences/ucm115756.htm>
- 2 National Milk Drug Residue Data Base: Fiscal Year 2008 Annual Report. GLH, Incorporated. Lighthouse, FL. February 13, 2009. Page 3. <http://www.fda.gov/downloads/Food/FoodSafety/Product-SpecificInformation/MilkSafety/MiscellaneousMilkSafetyReferences/UCM197413.pdf>
- 3 2009 FSIS National Residue Program Scheduled Sampling Plans. USDA Food Safety Inspection Service Office of Public Health Science. October 2009. Page xi. <http://www.ehso.com/ehsofda.php?URL=http%3A%2F%2Fwww.fda.gov/opacom/morechoices/smallbusiness/blubook/blubook2.htm>

Extra-Label Drug Use Decision Flow-Chart for Food Animals

You made a careful diagnosis in the presence of a Valid Veterinarian/Client/Patient Relationship. You are contemplating extra-label drug use. You must ask yourself...

Are the animals to be treated, food animals?

YES

Does a drug labeled for food animals exist which fulfills all of the following:

- ▶ contains the needed ingredient
- ▶ in the proper dosage form
- ▶ labeled for the indication
- ▶ and is clinically effective?

YES

You must use this drug per label, as extra-label drug use is unnecessary. Observe label directions and withdrawal time.

NO

Is there a drug approved for food animals which could be used in an extra-label manner?

YES

Proceed with the extra-label use of food animal drug. Establish extended withdrawal time. Ensure food safety. Maintain required records. Label drug appropriately.**

NO

Is there a human drug or drug approved for non-food animals which could be used in an extra-label manner?

YES

Is there adequate scientific information available to determine withdrawal time?

NO

If compounding of approved drugs will prevent pain and suffering, refer to CPG 608.400 for compounding guidance.***

YES

Proceed with extra-label drug use of human or non-food animal drug. Establish extended withdrawal time. Ensure food safety. Maintain required records. Label drug appropriately.

NO

Drug must not be used or treated animal must not enter the food supply.

*** Compounding of bulk drugs is generally illegal

This chart provided by the Center for Dairy Excellence.

Safe Levels for Extra-label Use of Drugs in Animals and Drugs Prohibited From Extra-label Use in Animals (21 CFR Sec. 530.41)⁴

Drugs prohibited for extra-label use in animals

The following drugs, families of drugs, and substances are prohibited for extra-label animal and human drug uses in food-producing animals.

- Chloramphenicol
- Clenbuterol
- Diethylstilbestrol (DES)
- Dimetridazole
- Iprnidazole
- Other Nitroimidazoles
- Furazolidone
- Nitrofurazone
- Sulfonamide drugs in lactating dairy cattle (except approved use of sulfadimethoxine, sulfabromomethazine, and sulfaethoxy pyridazine)
- Fluoroquinolones
- Glycopeptides
- Phenylbutazone in female dairy cattle 20 months of age or older

Drugs not approved for use in food-producing animals

The following drugs are **not approved for use** in any species of food-producing animal:

- Chloramphenicol
- Clenbuterol
- Colloidal Silver
- Diethylstilbestrol (DES)
- Dimetridazole (Flagyl®)
- Estradiol Cypionate (ECP)
- Glycopeptides (Vancomycin)
- Furazolidone (Furacin Ointment)
- Iprnidazole (Flagyl®)
- Nitrofurans (Nitrofurazone paste or Furazone aerosol spray)
- Other Nitroimidazoles (Flagyl® {Metronidazole})

The American Veterinary Medical Association (AVMA), the American Association of Bovine Practitioners (AABP), and the Academy of Veterinary Consultants (AVC) advocates their members voluntarily refrain from the use of aminoglycosides until further scientific information becomes available. Aminoglycoside antibiotics should not be used in cattle, except as specifically approved by the FDA:

- Amikacin
- Gentamicin
- Kanamycin
- Neomycin

Underlying Causes of Antibiotic Residues in Milk and Meat

Drug residues can be avoided by a well-planned drug use program. Reasons given for milk and meat residues result from many on-farm situations. These include, but are not limited to, the following:

- Not following veterinarian's recommendation when using any drug.
- Accidentally milking a treated cow into the bulk tank or not diverting from bulk tank.
- Not following manufacturer- or veterinarian-prescribed label directions for correct treatment.
- Not following the manufacturer or veterinarian prescribed label directions for the appropriate withdrawal period.
- Treatment not recorded as a written record – shipped or milked the cow too soon.
- Poor animal identification.
- Long-term residue following treatment as a calf.
- Use of medicated milk replacers in calves.

⁴ Code of Federal Regulations Title 21. 21CFR530.41. Food and Drug Administration. April 1, 2010. <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?fr=530.41>

By identifying the on-farm areas where incidents can occur that cause residues, producers can look deeper at the underlying issues. Some key underlying problems that lead to residues are:

1. The person(s) in charge of treating the cows are not working under a valid veterinary/client/patient relationship.
2. Employees are not trained properly and continuously in treatment protocols and maintaining written records.
3. The producer does not review all treatment records for veterinarian-recommended withdrawal times prior to marketing milk or meat.

Malicious Contamination

Dairymen should recognize and remember that antibiotic residues in milk may occur because of intentional, malicious contamination.



EXAMPLES OF PRODUCTS AND RISK FACTORS FOR RESIDUES

<p>Banamine (also known as Flu-Nix™, Prevail™, Flunixin meglumine*, Flumeglumine®)</p>	<ul style="list-style-type: none"> - Using the drug in an unapproved route of administration such as intramuscular or subcutaneous. These drugs are only approved for intravenous administration. Using another administration route results in extended withdrawal times, well beyond the labeled withhold time.
<p>Ceftiofur (Also known as Naxcel®, Excenel®, Excede®, Spectramast™)</p>	<ul style="list-style-type: none"> - Using the withhold time for one product when using another. The withholding times for each product are different. - Keeping accurate records to record the exact product given (Excede versus Excenel). - Using the drug in an unapproved route of administration. Excede is labeled to be given at the base or pinna of the ear only. Spectramast is the only ceftiofur product labeled for intramammary administration. Using these drugs in a route of administration not listed on the label will result in extended withdrawal times. - Naxcel no longer has a ZERO meat withdrawal time.
<p>Enrofloxacin (Baytril 100®) Danofloxacin (A180™)</p>	<ul style="list-style-type: none"> - Extra-label use in food animals is prohibited. - Only labeled for non-lactating dairy replacement animals and beef animals for pneumonia. Any other use is illegal.
<p>Florfenicol (Nuflo®)</p>	<ul style="list-style-type: none"> - Sustained release has a longer withdrawal time. - Not approved for dairy cattle over 20 months of age.
<p>Gentamicin</p>	<ul style="list-style-type: none"> - Use of gentamicin results in extended withdrawal times and therefore its use is discouraged by AVMA, AABP and AVC. - Use of gentamicin in lactating dairy cows for intramammary use is not recommended. - FARAD recommends not less than a TWO YEAR withdrawal and, therefore, the use of this drug should not be considered.
<p>Neomycin</p>	<ul style="list-style-type: none"> - Not following withdrawal time on the bag. - Feeding medicated milk replacer to calves to be processed for slaughter. - Extra-label use of oral neomycin products.
<p>Penicillin</p>	<ul style="list-style-type: none"> - Increasing the dose without using an extended withdrawal period. - Increasing the frequency or duration of administration without using an extended withdrawal period. - Using the drug in a route of administration not approved, such as intramammary or subcutaneous. - Giving more than 10CC/injection site (as per label instructions).
<p>Sulfas</p>	<ul style="list-style-type: none"> - Using any sulfonamide product not labeled for lactating dairy cows is illegal. - Using a higher dose or frequency of administration will result in extended withdrawal times. - Inadvertently administering a sustained release product when intending to use a daily use product.

*Due to the high risk of a violative residue, flunixin must only be used intravenously and not be given by either subcutaneous or intramuscular routes of administration.

RESOURCES

- Antibiotic Stewardship and Biosecurity Tool Kit for Dairy Producers, Washington State University Veterinary Extension <http://vetextension.wsu.edu/programs/bovine/stewardship/index.htm>
- Understand and prevent antibiotic residues risk in food of animal origin, Delvotest http://www.dsm.com/le/static/delvotest/downloads/GuideDelvotest-10Points_En.pdf
- Antibiotic Residues, UC Davis Veterinary Medical Extension http://www.vetmed.ucdavis.edu/vetext/INF-DA/INF-DA_AntibioticResidues.html
- Food Safety Concerns of Pesticides, Veterinary Drug Residues, and Mycotoxins in Meat and Meat Products Asian Journal of Animal Sciences <http://scialert.net/qredirect.php?doi=ajas.2010.46.55&linkid=pdf>
- Preventing Drug Residues in Milk and Dairy Cull Cows, Virginia Tech University Extension <http://pubs.ext.vt.edu/404/404-403/404-403.html>

STEPS TO PREVENT ANTIBIOTIC RESIDUES

Dairy producers realize the importance of eliminating the possibilities of having antibiotic residues in milk and dairy beef. Producers can take the following steps to mitigate or lessen the chances of antibiotic residues.

1. Establish a valid veterinarian-client-patient relationship to ensure proper diagnosis and treatment of disease.
2. Implement a preventive animal health program to reduce the incidence of disease.
3. Maintain milk quality and implement an effective mastitis management program to reduce the use of antibiotics.
4. Implement employee training and awareness of proper animal drug use.
5. Only use approved over-the-counter antibiotics, according to label instructions, and approved prescription antibiotics which have the proper label.
6. Keep records of antibiotic use and identify all treated animals, including treatment protocols.
7. Use drug residue screening tests specific for the drug

utilized before marketing milk and/or meat from treated animals.

8. Do not use drugs that are specifically prohibited for use in milking, dry, or growing animals.
9. Segregate and milk treated animals after, or in a separate facility from, all non-treated animals to ensure that milk is not accidentally commingled.
10. If in doubt about residue status, do not market milk and/or dairy beef from treated animals.

Rx and Extra-Label 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 extra-label-use antibiotic must be used as prescribed by a veterinarian, following the written instructions for the specific lifecycle of animals to be treated, including dose, route of administration, frequency of use, and withdrawal times for milk and/or meat.

Remember, extra-label use will generally require an extended withdrawal time.

FDA requires producers to maintain records for two years of all animals treated using extra-label drugs (21 CFR 530.5).⁵ The record system should be easily accessible to everyone who works with the animals. Records should be permanent so the veterinarian has a history to which he/she can refer to prescribe effective therapy and to serve as protection in case of a regulatory follow-up. The producer needs to be able to show where all drugs purchased were used or disposed. Violative residues can occur in healthy animals that have not been treated for clinical disease. An example is treatment with some dewormers which have a withdrawal period.

- Treatment date
- Animal identification
- Withdrawal time for milk and meat
- Individual who administered the drug
- Drug used
- Dosage
- Route of administration

5 Code of Federal Regulations Title 21. 21 CFR 530.5. Food and Drug Administration. <http://cfr.vlex.com/vid/530-5-veterinary-records-19714193>

The treatment record should contain the following basic information:



BEST MANAGEMENT CHECK LIST TO AVOID ANTIBIOTIC RESIDUES

1. Establish a Valid Veterinarian-Client-Patient Relationship (VCPR)

- A veterinarian has assumed the responsibility for making medical judgments regarding the health of the animals.
- A veterinarian has made routine and timely visits to the dairy to gain sufficient knowledge of the animals to initiate general or preliminary diagnosis of the medical condition of the animals.
- A veterinarian is readily available for follow-up in case of adverse reactions or failure of treatment.
- Employees are aware that it is policy to follow the instructions of a veterinarian.
- The veterinarian and producer have established an approved drug list.
- All drugs on the dairy have proper labeling.

2. Use Only FDA-Approved Over-the-Counter (OTC) or Prescription (Rx) Drugs with Veterinarian's Guidance

- Only FDA-Approved drugs are used to treat animals.
- Copies of drug inserts and/or product labeling are available for all drugs used on the dairy.
- Only a veterinarian can prescribe drugs in an "extra-label" manner.
- A list of current over-the-counter and prescription drugs has been developed that can be used with the dairy cows.
- Any Veterinary Feed Directive (VFD) feeds (i.e. Pulmotil in a swine feed) on the dairy are stored in such a way that an accidental use cannot occur.

3. Administer All Drugs Properly and Identify All Treated Animals

- Two or more methods are used to identify treated animals.
- The label and the package insert information is read and followed.
- Package inserts for drugs the veterinarian and the producer have put on the approved drug list are reviewed.
- A proper facility to segregate treated animals from untreated animals is available.

4. Maintain and Use Proper Treatment Records on All Treated Animals

- A record system is maintained for all treated animals.
- Treatment records are reviewed with the consulting veterinarian.
- Records are used to improve management of potential hazards and to reduce risk to milk quality.
- Record use is reviewed with family members and/or employees.

5. Use Drug Residue Screening Tests

- Withholding times are never decreased for meat or milk from treated animals.
- Milk is never marketed from a treated animal even if only one quarter was treated.
- Milk from treated dry-cows that freshen early is always tested for residues prior to marketing.
- Milk from newly purchased animals is always tested before adding their milk to the bulk tank.
- When a cow is treated in an extra-label manner, the milk gets tested. (When using bulk tank tests on individual cow milk, consult your veterinarian.)
- The veterinarian and/or co-op field staff are consulted on how to pull samples of milk for residue testing.

6. Implement Employee/Family Awareness of Proper Drug Use to Avoid Marketing Adulterated Milk Products

- Awareness exists that milk contamination often occurs when the normal pattern of milking changes (*vacation, children home from college, sickness, etc.*).
- Treatment records are checked before marketing animals.
- Employees and/or family members understand the cost of marketing adulterated meat or milk.
- Recommendations from the veterinarian are reviewed with employees and/or family members.
- Family members and/or employees understand the instructions found on the drug label.
- Family members and/or employees understand that all treated animals are milked last and/or their milk is diverted from saleable milk to prevent violative residues.
- Employees and/or family members receive regular training on the prevention of milk and meat residues.

Precautions While Administering Drugs

When treating animals with any product that is given IM, SC, or IV, or intramammary (IMM), take the following precautions:

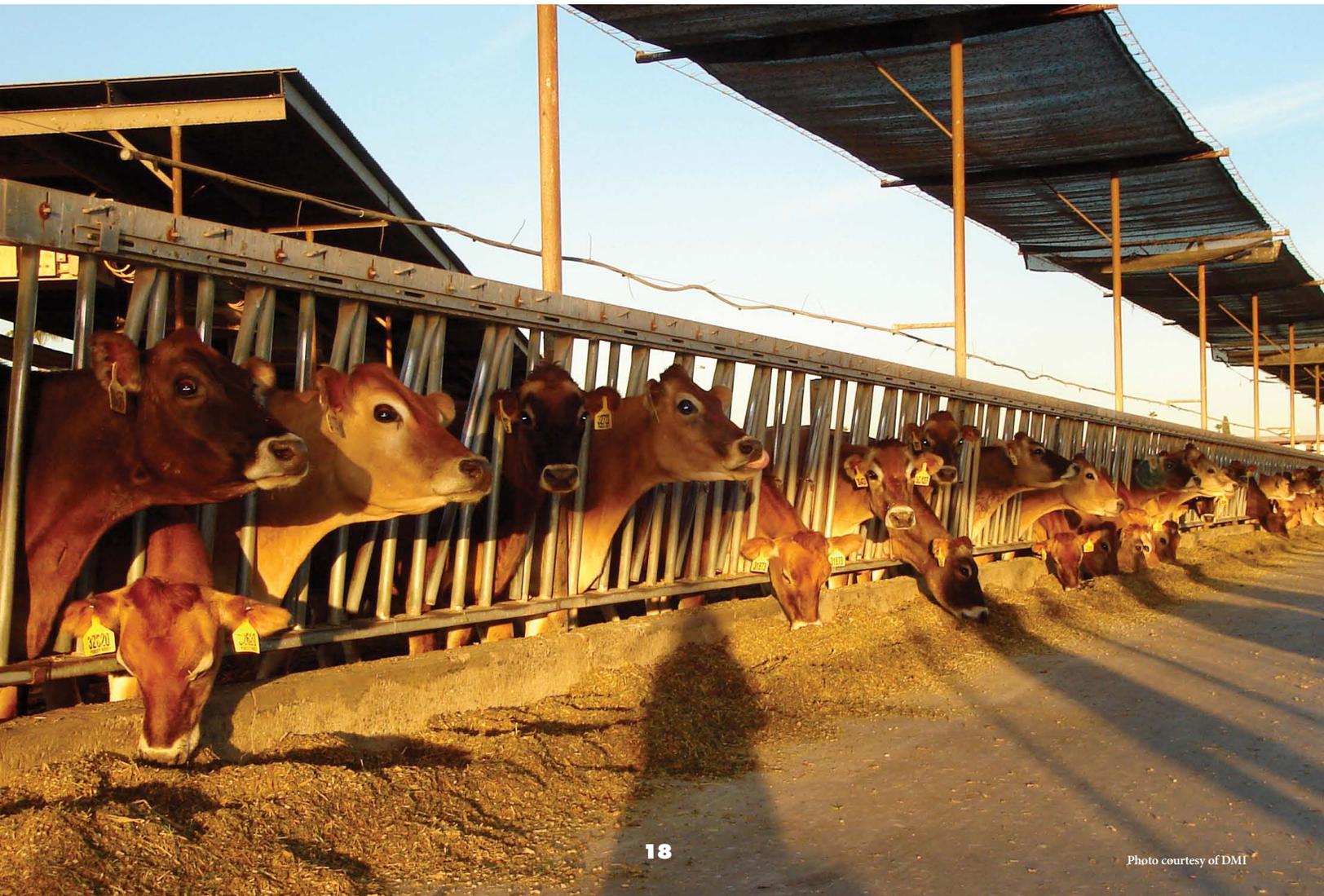
- Use a clean injection site and use a sterile needle for all injections.
- Use the labeled dosage and method of administration least likely to create a drug residue, such as intravenous or subcutaneous.
- Discard milk from all four quarters even when treating only one quarter with an IMM infusion.
- 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 has come in contact with milk from treated cows.
- Make certain that any procedure used to divert milk from treated cows cannot accidentally send contaminated milk into the pipeline.
- Keep medicated feeds separated from non-medicated feeds.
- Ensure that calves fed antibiotic waste milk are not sent to slaughter until withdrawal times are met.
- Train employees on proper injection site selection.

APPROVED DRUG AND SCREENING TESTS

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 what products may be available, and the producer is 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.

Data provided by the manufacturer or marketer is current as of August 2010. Veterinarians needing extra-label information should consult the FDA [Green Book](#) or contact the **Food Animal Residue Avoidance Databank (FARAD)** at 888-873-2723.



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 Vetmedica, Inc.
Ceftiofur crystalline free acid	Rx	13 days	EXCEDE®	Pfizer, Inc.
Ceftiofur hydrochloride	Rx	3 days	EXCENEL® RTU P	Pfizer, Inc.
Ceftiofur sodium	Rx	4 days	Naxcel® Sterile Powder	Pfizer, Inc.
Cloprostenol sodium	Rx	None	Estrumate	Intervet Schering-Plough Animal Health
	Rx	None	estroPLAN	Agri Laboratories, Ltd.
Dinoprost tromethamine	Rx	None	Lutalyse® Sterile Solution	Pfizer, Inc.
Doramectin	O-TC	35 days	Dectomax® Injectable	Pfizer, Inc.
Erythromycin	Rx	21 days	Gallimycin-100	Bimeda, Inc.
Florfenicol	Rx	28 or 38 days## (See label)	Nuflor Injectable Solution	Intervet Schering-Plough Animal Health
Flunixin meglumine	Rx	4 days	Banamine	Intervet Schering-Plough Animal Health
	Rx	4 days	Flumeglumine®	Phoenix Pharmaceutical, Inc./Clipper Distributing
	Rx	4 days	Flunixin Injection	Norbrook Laboratories, Ltd.
	Rx	4 days	Flunazine	Bimeda, Inc.
Gonadotropin (chorionic)	Rx	None	Chorulon®	Intervet Schering-Plough Animal Health
Gonadorelin diacetate tetrahydrate	Rx	None	Cystorelin	Merial Limited
	Rx	None	Fertagyl®	Intervet Schering-Plough Animal Health
	Rx	None	OvaCyst™	Phoenix Pharmaceutical, Inc./Clipper Distributing
Gonadorelin hydrochloride	Rx	None	Factrel®	Fort Dodge Animal Health Division of Wyeth Holding Corp, a wholly owned subsidiary of Pfizer Inc.
Isoflupredone acetate	Rx	7 days	Predef® 2x	Pfizer, Inc.
Ivermectin*	O-TC	35 days	Ivercide™ Injection 1% for Cattle	Phoenix Pharmaceutical, Inc./Clipper Distributing
	O-TC	35 days	IVOMEC 1% Injection for Cattle	Merial Limited
	O-TC	35 days	Noromectin® Injection	Norbrook Laboratories, Ltd.
Ivermectin/Clorsulon*	O-TC	49 days	IVOMEC Plus Injection for Cattle	Merial Limited
	O-TC	49 days	Noromectin® Plus Injection	Norbrook Laboratories, Ltd.
Oxytetracycline	O-TC	28 days	Bio-Mycin® 200	Boehringer Ingelheim Vetmedica, Inc.
	O-TC	28 days	Liquamycin® LA-200®	Pfizer, Inc.
	O-TC	28 days	Maxim-200	Phoenix Pharmaceutical, Inc./Clipper Distributing
	O-TC	28 days	Oxytetracycline Injection 200	Norbrook Laboratories, Ltd.
	O-TC	28 days	Pennox 200™	Pennfield Animal Health
	Rx	28 days	Tetradure 300	Merial Limited
Oxytetracycline hydrochloride	O-TC	28 days	Tetroxy LA	Bimeda, Inc.
	Rx	18 days	Bio-Mycin® C	Boehringer Ingelheim Vetmedica, Inc.
	O-TC	18 days	Oxy-Tet™ 100	Boehringer Ingelheim Vetmedica, Inc.
	O-TC	22 days	Oxytet 100	Norbrook Laboratories, Ltd.
	O-TC	22 days	Promycin™ 100	Phoenix Pharmaceutical, Inc./Clipper Distributing
Penicillin G (benzathine)	O-TC	30 days	Combi-Pen™-48	Bimeda, Inc.
	O-TC	30 days	Hanford's/US Vet Sterile Penicillin G Benzathine/Penicillin G Procaine Aqueous Suspension	G.C. Hanford Mfg. Co.

Withholding times depend upon labeled dosage used.

* Ivermectin is not approved for female dairy cattle of breeding age.

** The term non-lactating cattle is defined as including dairy bulls, dairy calves, replacement heifers, and dry cows for some drugs. Read the 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 Injectable Use

Non-lactating Cattle**

Active Ingredient	Drug Type	Meat Withholding Time	Product Name	Manufacturer/Marketer
Penicillin G (procaine)	O-TC	4 days	Pro-Pen-G™ Injection	Bimeda, Inc.
	O-TC	10 days	Hanford's/US Vet Sterile Penicillin G Penicillin G Procaine Aqueous Suspension	G.C. Hanford Mfg. Co.
	O-TC	10 days	Norocillin	Norbrook Laboratories, Ltd.
Selenium (sodium selenite)	Rx	30 days	BO-SE	Intervet Schering-Plough Animal Health
Spectinomycin sulfate	Rx	11 days	ADSPEC®	Pfizer, Inc.
Sulfachlorpyridazine (sodium)	O-TC	5 days	Vetisulid Injection	Boehringer Ingelheim Vetmedica, Inc.
Sulfadimethoxine	O-TC	5 days	Di-Methox Injection 40%	Agri Laboratories, Ltd.
Tilmicosin phosphate*	Rx	42 days	Micotil Injection	Elanco Animal Health
Tripelennamine HCL	Rx	4 days	Recovr Injectable	Fort Dodge Animal Health Division of Wyeth Holding Corp, a wholly owned subsidiary of Pfizer Inc.
Tulathromycin	Rx	18 days	DRAXXIN™	Pfizer, Inc.
Tylosin	O-TC	21 days	Tylan Injection 50/200	Elanco Animal Health
	O-TC	21 days	Tylosin Injection	Boehringer Ingelheim Vetmedica, Inc.
Vitamin E	Rx	30 days	BO-SE	Intervet Schering-Plough Animal
	Rx	None	Vital E	Intervet Schering-Plough Animal Health

* Not for use in female dairy cattle 20 months of age or older

** The term non-lactating cattle is defined as including dairy bulls, dairy calves, replacement heifers, and dry cows for some drugs. Read the 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 Intramammary Use*

Non-lactating Cattle**

Active Ingredient	Drug Type	Milk Withholding Time	Meat Withholding Time	Product Name	Manufacturer/Marketer
Ceftiofur hydrochloride	Rx	None	16 days 30 day dry cow	SPECTRAMAST™ DC	Pfizer, Inc.
Cephapirin (benzathine)	O-TC	72 hours	42 days	Tomorrow Infusion	Boehringer Ingelheim Vetmedica, Inc.
Cloxacillin (benzathine)	Rx	None	30 days	Dry-Clox®	Boehringer Ingelheim Vetmedica, Inc.
	Rx	None*	28 days	Orbenin-DC®	Schering-Plough Animal Health
Novobiocin	O-TC	72 hours Postcalving	30 days	BioDry®	Pfizer, Inc.
Penicillin G (procaine)	O-TC	72 hours Postcalving	14 days	Hanford's/US Vet godry™	G.C. Hanford Mfg. Co.
Penicillin G (procaine)/ Dihydrostreptomycin	Rx	96 hours Postcalving	60 days	Quartermaster® Dry Cow Treatment	Pfizer, Inc.
Penicillin G (procaine)/ Novobiocin	O-TC	72 hours Postcalving	30 days	AlbaDry® Plus Suspension	Pfizer, Inc.

*Do not use within 4 weeks (28 days) of calving.

FDA-Approved Drugs for Oral Use

Non-lactating Cattle**

Active Ingredient	Drug Type	Meat Withholding Time	Product Name	Manufacturer/Marketer
Albendazole	O-TC	27 days	Valbazen® Suspension	Pfizer, Inc.
Amprolium	O-TC	1 day	CORID 9.6% Oral Solution	Merial Limited
	O-TC	1 day	CORID 20% Powder	Merial Limited
Chlortetracycline Hydrochloride	O-TC	1 day	Chlortetracycline Soluble Powder Concentrate	Boehringer Ingelheim Vetmedica, Inc.
	O-TC	1 day	Pennchlor 64 Soluble Powder	PennField Animal Health
Citric acid	O-TC	None	Re-Sorb® Powder	Pfizer, Inc.
Decoquinat	O-TC	None	Deccox-M	Alpharma Inc.
Dextrose	O-TC	None	Re-Sorb® Powder	Pfizer, Inc.
Fenbendazole	O-TC	8 days	Panacur 10% Paste/Safe-Guard 10% Paste	Intervet Schering-Plough Animal Health
	Rx	8 days	Panacur 10% Suspension	Intervet Schering-Plough Animal Health
	O-TC	8 days	Safe-Guard 10% Suspension	Intervet Schering-Plough Animal Health
Glycine	O-TC	None	Re-Sorb® Powder	Pfizer, Inc.
Lasalocid	O-TC	None	Crystalax® Iono-Lyx® B300	Ridley Block Operations
Levamisole hydrochloride	O-TC	2 days	Prohibit Soluble Drench Powder	Agri Laboratories Ltd.
Monensin (sodium)	O-TC	None	Rumineral Supplement Medicated	Elanco Animal Health
Neomycin sulfate	O-TC	1 day	Biosol® Liquid	Pfizer, Inc.
	O-TC	1 day	Neo-Sol 50	Alpharma Inc.
	O-TC	1 day	Neomix® 325	Pfizer, Inc.
	O-TC	1 day	Neomix® Ag 325	Pfizer, Inc.
	O-TC	1 day	NeoMed 325 Soluble Powder	Bimeda, Inc.
	O-TC	1 day	Neomycin Oral Solution	Phoenix Pharmaceutical, Inc./ Clipper Distributing
Oxfendazole	O-TC	7 days	Synanthic® Bovine Dewormer Suspensions, 22.5 % and 9.06%	Boehringer Ingelheim Vetmedica, Inc.

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FDA-Approved Drugs for Oral Use Non-lactating Cattle** (continued)

Active Ingredient	Drug Type	Meat Withholding Time	Product Name	Manufacturer/Marketer
Oxytetracycline hydrochloride	O-TC	None	Oxy 500 Calf Bolus and Oxy 1000 Calf Bolus	Boehringer Ingelheim Vetmedica, Inc.
	O-TC	5 days	Pennox 343 Soluble Powder	PennField Animal Health
	O-TC	5 days	Terramycin® 343 Soluble Powder	Pfizer, Inc.
	O-TC	7 days	Terramycin® Scours Tablets	Pfizer, Inc.
	O-TC	5 days	Terramycin® Soluble Powder	Pfizer, Inc.
Potassium citrate	O-TC	None	Re-Sorb® Powder	Pfizer, Inc.
Potassium dihydrogen phosphate	O-TC	None	Re-Sorb® Powder	Pfizer, Inc.
Sodium chloride	O-TC	None	Re-Sorb® Powder	Pfizer, Inc.
Streptomycin sulfate	O-TC	2 days	Strep Sol 25%	Veterinary Services, Inc.
Sulfachlorpyridazine (sodium)	O-TC	7 days	Vetisulid® Powder	Boehringer Ingelheim Vetmedica, Inc.
Sulfadimethoxine	O-TC	7 days	Albon® Concentrated Solution 12.5%	Pfizer, Inc.
	Rx	12 days	Albon® S.R. (Sustained Release Bolus)	Pfizer, Inc.
	O-TC	7 days	Di-Methox 12.5% Oral Solution	Agri Laboratories, Ltd.
	O-TC	7 days	Di-Methox Soluble Powder	Agri Laboratories, Ltd.
	O-TC	7 days	SulfaMed-G	Bimeda, Inc.
Sulfamethazine	O-TC	10 days	Sulmet® Oblets	Boehringer Ingelheim Vetmedica, Inc.
	O-TC	12 days	Sustain III - Cattle	Bimeda, Inc.
	O-TC	12 days	Sustain III - Calf	Bimeda, Inc.
Sulfamethazine (sodium)	O-TC	10 days	Sulmet® Drinking Water Solution	Boehringer Ingelheim Vetmedica, Inc.
	O-TC	10 days	Sulmet® Soluble Powder	Boehringer Ingelheim Vetmedica, Inc.
	O-TC	10 days	SMZ-Med	Bimeda, Inc.
Sulfaquinoxaline (sodium)	O-TC	10 days	Liquid Sul-Q-Nox	Boehringer Ingelheim Vetmedica, Inc.
Tetracycline hydrochloride	O-TC	4 days	Polyotic® Soluble Powder	Boehringer Ingelheim Vetmedica, Inc.
	O-TC	7 days	Polyotic® Soluble Powder Concentrate	Fort Dodge Animal Health Division of Wyeth Holding Corp, a wholly owned subsidiary of Pfizer Inc.
	O-TC	5 days	Tet-Sol 10	Alpharma Inc.
	O-TC	5 days	Tet-Sol 324	Alpharma Inc.
	O-TC	5 days	TetraMed 324 HCA	Bimeda, Inc.
	O-TC	5 days	Tetra-Bac 324	Agri Laboratories, Ltd

FDA-Approved Drugs for Topical Use Non-lactating Cattle**

Active Ingredient	Drug Type	Meat Withholding Time	Product Name	Manufacturer/Marketer
Doramectin	O-TC	45 days	Dectomax® Pour-On	Pfizer, Inc.
Eprinomectin	O-TC	None	Ivomec Eprinex Pour-On for Beef and Dairy Cattle	Meril Limited
Ivermectin*	O-TC	48 days	IVOMEC (Ivermectin) Pour-On	Meril Limited
	O-TC	48 days	Ivercide™ Pour-On	Phoenix Pharmaceutical, Inc/ Clipper Distributing
	O-TC	48 days	Noromectin® Pour-On	Norbrook Laboratories, Ltd.
Moxidectin	O-TC	None	Cydetin® (moxidectin) 0.5% Pour-On for Cattle	Boehringer Ingelheim Vetmedica, Inc.

* Not for use in female dairy cattle 20 months of age or older.

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FDA-Approved Drugs for Feed Additive Use

Non-lactating Cattle**

Active Ingredient	Drug Type	Meat Withholding Time	Product Name	Manufacturer/Marketer
Amprolium	O-TC	24 hours	Corid 1.25% Type C	Meril Limited
	O-TC	24 hours	Corid 2.5% Type B	Meril Limited
	O-TC	24 hours	Corid 25% Type A	Meril Limited
Bacitracin zinc	O-TC	None	Baciferm	Alpharma Inc.
Bacitracin methylene disalicylate	O-TC	None	BMD 30	Alpharma Inc.
	O-TC	None	BMD 50	Alpharma Inc.
	O-TC	None	BMD 60	Alpharma Inc.
Chlortetracycline	O-TC	7 days	Aureo S700G	Alpharma Inc.
	O-TC	None	Aureomycin G	Alpharma Inc.
	O-TC	1 day	ChlorMax 50	Alpharma Inc.
Chlortetracycline calcium	O-TC	None	Pennchlor™	PennField Animal Health
Chlortetracycline hydrochloride	O-TC	0-10 days##	Pennchlor™ 100-MR	PennField Animal Health
	O-TC	0-10 days##	CLTC 100 MR	Phibro Animal Health
Decoquinat	O-TC	None	Deccox	Alpharma Inc.
Fenbendazole	O-TC	13 days	Safe-Guard 0.5% Top Dress Pellets	Intervet Schering-Plough Animal Health
	O-TC	13 days	Safe-Guard 1.96% Free-Choice Mineral	Intervet Schering-Plough Animal Health
	O-TC	13 days	Safe-Guard 20% Salt Free-Choice Mineral	Intervet Schering-Plough Animal Health
	O-TC	11 days	Safe-Guard En-Pro-Al	Molasses Blade
Lasalocid	O-TC	None	Bovatec Premix***	Alpharma Inc.
Morantel tartrate	O-TC	14 days	Rumatel® 88	Phibro Animal Health
Monensin (sodium)	O-TC	None	Rumensin 90	Elanco Animal Health
Neomycin sulfate	O-TC	1 day	Neomix® 325 Medicated Premix	Pfizer, Inc.
	O-TC	1 day	Neomix Ag® 325 Medicated Premix	Pfizer, Inc.
Neomycin-oxytetracycline	O-TC	0-30 days##	Neo-Oxy 50/50	PennField Animal Health
	O-TC	0-30 days##	Neo-Oxy 100/100	PennField Animal Health
	O-TC	0-30 days##	Neo-Oxy 100/50	PennField Animal Health
	O-TC	30 days	Neo-Oxy 100/50 MR	PennField Animal Health
	O-TC	0-5 days##	Neo-Terramycin® 50/50	Phibro Animal Health
	O-TC	0-5 days##	Neo-Terramycin® 50/50D	Phibro Animal Health
	O-TC	0-5 days##	Neo-Terramycin® 100/100	Phibro Animal Health
	O-TC	0-5 days##	Neo-Terramycin® 100/100D	Phibro Animal Health
Oxytetracycline (quaternary salt)	O-TC	0-5 days##	Pennox™	PennField Animal Health
Oxytetracycline hydrochloride	O-TC	0-5 days##	Pennox™ 100-MR	PennField Animal Health
Oxytetracycline dihydrate	O-TC	None	Terramycin® 50	Phibro Animal Health
	O-TC	None	Terramycin® 100	Phibro Animal Health
	O-TC	None	Terramycin® 100MR	Phibro Animal Health
	O-TC	None	Terramycin® 200	Phibro Animal Health
Poloxalene	O-TC	None	Bloat Guard® Liquid Type A - Medicated Article	Phibro Animal Health
	O-TC	None	Bloat Guard® Medicated Top Dressing	Phibro Animal Health
	O-TC	None	Bloat Guard® Type A Medicated Article	Phibro Animal Health
Sulfamethazine	O-TC	7 days	Aureo S700G	Alpharma Inc.
Virginiamycin	O-TC	None	V-Max™	Phibro Animal Health
	O-TC	None	V-Max™ 50	Phibro Animal Health

Withholding times depend upon labeled dosage used.

** The term non-lactating cattle is defined as including dairy bulls, dairy calves, replacement heifers, and dry cows for some drugs. Read the 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.

*** Approved only for replacement heifers up to freshening or calving.

FDA-Approved Drugs for Injectable Use

Lactating Cows

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®	Pfizer, Inc.
Ceftiofur hydrochloride	Rx	None	3 days	EXCENEL® RTU	Pfizer, Inc.
Ceftiofur sodium	Rx	None	4 days	Naxcel® Sterile Powder	Pfizer, Inc.
Cloprostenol sodium	Rx	None	None	Estrumate	Schering-Plough Animal Health
	Rx	None	None	estroPLAN	Agri Laboratories, Ltd.
Dexamethasone	Rx	None	None	Azium Solution 2 Mg	Schering-Plough Animal Health
	Rx	None	None	Dexamethasone Solution	Phoenix Pharmaceutical, Inc./Clipper Distributing
	Rx	None	None	Dexium	Bimeda, Inc.
Dinoprost Tromethamine	Rx	None	None	Lutalyse® Sterile Solution	Pfizer, Inc.
	Rx	None	None	PROSTAMATE™	Phoenix Pharmaceutical, Inc./Clipper Distributing
Flunixin meglumine	Rx	36 hours	4 days	Banamine	Schering-Plough Animal Health
	Rx	36 hours	4 days	Flunazine	Bimeda, Inc.
	Rx	36 hours	4 days	Flunixin Injection	Norbrook Laboratories, Ltd.
Gonadorelin diacetate tetrahydrate	Rx	None	None	Cystorelin Injectable	Merial Limited
	Rx	None	None	Fertagyl®	Intervet Schering-Plough Animal Health
	Rx	None	None	OvaCyst™	Phoenix Pharmaceutical, Inc./Clipper Distributing
Gonadorelin hydrochloride	Rx	None	None	Factrel®	Fort Dodge Animal Health
					Division of Wyeth Holding Corp, a wholly owned subsidiary of Pfizer Inc.
Gonadotropin (chorionic)	Rx	None	None	Chorulon®	Intervet Inc.
Isoflupredone acetate	Rx	None	7 days	Predef® 2x	Pfizer, Inc.
Oxytetracycline	O-TC	96 hours	28 days	Bio-Mycin® 200	Boehringer Ingelheim Vetmedica, Inc.
	O-TC	96 hours	28 days	Pennox 200 Injectable	Pennfield Animal Health
	O-TC	96 hours	28 days	Liquamycin® IA-200®	Pfizer, Inc.
	O-TC	96 hours	28 days	Agrimycin 200	Agri Laboratories, Ltd.
Oxytocin	Rx	None	None	Oxytocin Injection	Phoenix Pharmaceutical, Inc./Clipper Distributing
	Rx	None	None	Oxytocin Injection	Bimeda, Inc.
Penicillin G (procaine)	O-TC	48 hours	4 days	Pro-Pen-G™ Injection	Bimeda, Inc.
	O-TC	48 days	10 days	Hanford's/US Vet Sterile Penicillin G Penicillin G Procaine Aqueous Suspension	G.C. Hanford Mfg. Co
	O-TC	48 hours	10 days	Norocillin	Norbrook Laboratories, Ltd.
Somtribove zinc	O-TC	None	None	Posilac	Elanco Animal Health
Sulfadimethoxine	O-TC	60 hours	5 days	Di-Methox Injection 40%	Agri Laboratories, Ltd.
Tripelethamine hydrochloride	Rx	24 hours	4 days	Recovr Injectable	Fort Dodge Animal Health
					Division of Wyeth Holding Corp, a wholly owned subsidiary of Pfizer Inc.

FDA-Approved Drugs for Intramammary Use Lactating Cows

Active Ingredient	Drug Type	Milk Withholding Time	Meat Withholding Time	Product Name	Manufacturer/Marketer
Amoxicillin trihydrate	Rx	60 hours	12 days	Amoxi-Mast®	Schering-Plough Animal Health
Ceftiofur hydrochloride	Rx	72 hours	2 days	SPECTRAMAST™ LC	Pfizer, Inc.
Cephapirin (sodium)	O-TC	96 hours	4 days	Today®	Boehringer Ingelheim Vetmedica, Inc.
Cloxacillin (sodium)	Rx	48 hours	10 days	Dariclox®	Schering-Plough Animal Health
Hetacillin (potassium)	Rx	72 hours	10 days	Hetacin®K;	Boehringer Ingelheim Vetmedica, Inc.
Penicillin G (procaine)	O-TC	60 hours	3 days	Hanford's/US Vet MASTICLEAR™	G.C. Hanford Mfg. Co.
Pirlimycin	Rx	36 hours	9 days	Pirsue® Sterile Solution	Pfizer, Inc.

FDA-Approved Drugs for Oral Use Lactating Cows

Active Ingredient	Drug Type	Milk Withholding Time	Meat Withholding Time	Product Name	Manufacturer/Marketer
Dexamethasone	Rx	None	None	Azium Powder	Intervet Schering-Plough Animal Health
	Rx	72 hours	None	Naquasone Bolus Safe-Guard 10% Paste	Intervet Schering-Plough Animal Health
Fenbendazole	O-TC	None	8 days	Safe-Guard 10% Suspension	Intervet Schering-Plough Animal Health
Magnesium hydroxide	O-TC	12 hours	None	Carmilax Bolus	Pfizer, Inc.
	O-TC	12 hours	None	Carmilax Powder	Pfizer, Inc.
Poloxalene	O-TC	None	None	Bloat Guard® Top Dressing	Phibro Animal Health
	O-TC	None	None	TheraBloat® Drench Concentrate	Pfizer, Inc.
Sulfadimethoxine	O-TC	60 hours	7 days	ALBON® Bolus	Pfizer, Inc.
Trichlormethiazide	Rx	72 hours	None	Naquasone Bolus	Schering-Plough Animal Health

FDA-Approved Drugs for Feed Additive Use Lactating Cows

Active Ingredient	Drug Type	Milk Withholding Time	Meat Withholding Time	Product Name	Manufacturer/Marketer
Fenbendazole	O-TC	None	13 days	Safe-Guard 0.5% Top Dress Pellets	Intervet Schering-Plough Health
	O-TC	None	13 days	Safe-Guard 1.96%	Intervet Schering-Plough Health
	O-TC	None	13 days	Safe-Guard 20% Salt Free-Choice Mineral	Intervet Schering-Plough Health
	O-TC	None	13 days	Safe-Guard 35% Salt Free-Choice Mineral	Intervet Schering-Plough Health
Monensin (sodium)	O-TC	None	None	Rumensin 90	Elanco Animal Health
Morantel tartrate	O-TC	None	14 days	Rumatel® 88	Phibro Animal Health
Poloxalene	O-TC	None	None	Bloat Guard® Liquid - Type A Medicated Article	Phibro Animal Health
	O-TC	None	None	Bloat Guard® Medicated Top Dressing	Phibro Animal Health
	O-TC	None	None	Bloat Guard® Type A Medicated Article	Phibro Animal Health

FDA-Approved Drugs for Intrauterine Administration Lactating Cows

Active Ingredient	Drug Type	Milk Withholding Time	Meat Withholding Time	Product Name	Manufacturer/Marketer
Progesterone	O-TC	None	None	EAZI-Breed™ CIDR® Cattle Insert	Pfizer, Inc.

FDA-Approved Drugs for Topical Use Lactating Cows

Active Ingredient	Drug Type	Milk Withholding Time	Meat Withholding Time	Product Name	Manufacturer/Marketer
Balsam peru oil	O-TC	None	None	Granulex Liquid	UDL Laboratories, Inc.
Castor oil	O-TC	None	None	Granulex Liquid	UDL Laboratories, Inc.
Eprinomectin	O-TC	None	None	Ivomec® Eprinex® Pour-On for Beef & Dairy Cattle	Meril Limited
Moxidectin	O-TC	None	None	Cydectin® (moxidectin) 0.5% Pour-On for Cattle	Boehringer Ingelheim Vetmedica, Inc
Oxytetracycline hydrochloride/Polymyxin B sulfate	O-TC	None	None	Terramycin® Ophthalmic Ointment with Polymyxin	Pfizer, Inc.
Trypsin	O-TC	None	None	Granulex Liquid	UDL Laboratories, Inc.

Dairy Antibiotic Concerns?



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LABORATORIES

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Serum and Urine Screening Tests

Screening Tests Available as of August 2010

Can be used in any dairy animal for detecting drug residues in serum and urine.[§]

Residues Sensitivity Detected	Test Name	Sponsor	Specimen	(ppb)
Amoxicillin	Charm II Beta-lactam Test	Charm Sciences	Serum	500
			Urine	2000
	Charm KIS Test	Charm Sciences	Serum	80
			Urine	1000
	Charm SL Beta-lactam Test for Urine Meatsafe™ β-Lactam	Charm Sciences SILVER LAKE	Urine	40
			Urine	‡
One-Step Test	Research Corporation			
Premi®test	DSM	Urine	5	
Ampicillin	Charm II Beta-lactam Test	Charm Sciences	Serum	200
			Urine	800
	Charm KIS Test	Charm Sciences	Serum	80
			Urine	1000
	Charm SL Beta-lactam Test for Urine Meatsafe™ β-Lactam	Charm Sciences SILVER LAKE	Urine	55
			Urine	‡
One-Step Test	Research Corporation			
Premi®test	DSM	Urine	5	
Ceftiofur	Charm II Beta-lactam Test	Charm Sciences	Serum	500
			Urine	2000
	Charm KIS Test	Charm Sciences	Serum	500
			Urine	5000
	Charm SL Beta-lactam Test for Urine Premi®test	Charm Sciences DSM	Urine	300
			Urine	100
Cephalexin (unapproved in dairy cattle)	Charm II Beta-lactam Test	Charm Sciences	Serum	500
			Urine	2000
	Charm KIS Test	Charm Sciences	Serum	1000
			Urine	10,000
Cephapirin	Charm II Beta-lactam Test	Charm Sciences	Serum	200
			Urine	800
	Charm KIS Test	Charm Sciences	Serum	1000
			Urine	10,000
Charm SL Beta-lactam Test for Urine Premi®test	Charm Sciences DSM	Urine	85	
		Urine	100	
Chloramphenicol ^D (prohibited)	Charm II Amphenicol Test	Charm Sciences	Serum	40
			Urine	40
	Charm II Chloramphenicol Test	Charm Sciences	Serum	0.3
			Urine	10
Chlortetracycline (prohibited as feed additive for lactating dairy cows)	Charm ROSA Tetracycline Test	Charm Sciences	Urine	3000

§ 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.

D The use of chloramphenicol in any food-producing animal is strictly forbidden under federal law. Consider testing for chloramphenicol in purchased new additions to the lactating herd or in other instances where the drug-treatment history is unknown.

‡ Predicts pass or fail on USDA tissue residue tests.

Serum and Urine Screening Tests

Screening Tests Available as of August 2010

Residues Sensitivity Detected	Test Name	Sponsor	Specimen	(ppb)
Chlortetracycline (prohibited as feed additive for lactating dairy cows)	Charm II Tetracycline Test	Charm Sciences	Serum	200
	Charm KIS Test	Charm Sciences	Urine	3000
	Premi®test	Charm Sciences	Serum	2000
Cloxacillin	Premi®test	DSM	Urine	20,000
	Charm II Beta-lactam Test	DSM	Urine	50
	Charm KIS Test	Charm Sciences	Serum	2500
	Charm SL Beta-lactam Test for Urine	Charm Sciences	Urine	10,000
	Meatsafe™ β-Lactam One-Step Test	SILVER LAKE Research Corporation	Serum	500
Danofloxacin	Premi®test	DSM	Urine	5000
	Premi®test	DSM	Urine	300
	Premi®test	DSM	Urine	600
Dihydrostreptomycin	Charm II Streptomycin Test	Charm Sciences	Urine	‡
	Charm KIS Test	Charm Sciences	Serum	100
	Premi®test	DSM	Urine	2000
Enrofloxacin	Charm Enroflox Test (ROSA Test)	Charm Sciences	Serum	20,000
	Premi®test	DSM	Urine	3000
Erythromycin	Charm Enroflox Test (ROSA Test)	Charm Sciences	Urine	100
	Charm KIS Test	Charm Sciences	Urine	600
	Charm II Macrolide Test	Charm Sciences	Serum	400
	Premi®test	DSM	Urine	4000
Florfenicol	Charm II Macrolide Test	Charm Sciences	Serum	500
	Charm II Amphenicol Test	Charm Sciences	Urine	500
	Premi®test	DSM	Urine	100
Gentamicin (unapproved in dairy cattle) (AVMA, AABP and Academy of Veterinary Consultants [AVC] advocate their members voluntarily refrain from use)	Charm II Gentamicin and Neomycin Test	Charm Sciences	Serum	4000
	Charm KIS Test	Charm Sciences	Urine	4000
	Meatsafe™ Gentamicin Strip Test	SILVER LAKE Research Corporation	Serum	250
	Premi®test	DSM	Urine	2500
	Premi®test	DSM	Urine	‡

‡ Predicts pass or fail on USDA tissue residue tests.

Serum and Urine Screening Tests

Screening Tests Available as of August 2010

Residues Sensitivity Detected	Test Name	Sponsor	Specimen	(ppb)
Hetacillin	Charm II Beta-lactam Test	Charm Sciences	Serum	200
			Urine	1000
	Charm KIS Test	Charm Sciences	Serum	40
			Urine	400
	Charm SL Beta-lactam Test for Urine	Charm Sciences	Urine	250
	Meatsafe™ β -Lactam One-Step Test	SILVER LAKE Research Corporation	Urine	‡
Kanamycin (unapproved in dairy cattle) (AVMA, AABP and Academy of Veterinary Consultants [AVC] advocate their members voluntarily refrain from use)	Charm II Gentamicin and Neomycin Test	Charm Sciences	Serum	2000
			Urine	2,000
	Charm KIS Test	Charm Sciences	Serum	10,000
Lincomycin (unapproved in dairy cattle)	Charm II Macrolide Test	Charm Sciences	Serum	2000
			Urine	2000
	Charm KIS Test	Charm Sciences	Serum	2000
			Urine	20,000
	Premi®test	DSM	Urine	100
Neomycin	Charm II Gentamicin and Neomycin Test	Charm Sciences	Serum	50
			Urine	10,000
	Charm KIS Test	Charm Sciences	Serum	1,000
			Urine	300
	Premi®test	DSM	Urine	300
Oxacillin	Charm II Beta-lactam Test	Charm Sciences	Serum	2500
			Urine	10,000
	Charm SL Beta-lactam Test for Urine	Charm Sciences	Urine	300
	Charm KIS Test	Charm Sciences	Serum	1000
			Urine	10,000
Oxytetracycline (prohibited as feed additive for lactating dairy cows)	Charm ROSA Tetracycline Test	Charm Sciences	Urine	3000
	Charm II Tetracycline Test	Charm Sciences	Serum	200
			Urine	3000
	Charm KIS Test	Charm Sciences	Serum	250
			Urine	2500
	Premi®test	DSM	Urine	50
Penicillin	Charm II Beta-lactam Test	Charm Sciences	Serum	200
			Urine	800
	Charm KIS Test	Charm Sciences	Serum	20
			Urine	800
	Charm SL Beta-lactam Test for Urine	Charm Sciences	Urine	25

‡ Predicts pass or fail on USDA tissue residue tests.

Serum and Urine Screening Tests

Screening Tests Available as of August 2010

Residues Sensitivity Detected	Test Name	Sponsor	Specimen	(ppb)
Penicillin	Meatsafe™ β -Lactam One-Step Test	SILVER LAKE Research Corporation	Urine	‡
	Premi®test	DSM	Urine	5
Pirlimycin	Charm II Macrolide Test	Charm Sciences	Serum	3000
			Urine	3000
Streptomycin	Charm II Streptomycin Test	Charm Sciences	Serum	100
	Charm KIS Test	Charm Sciences	Urine	2000
Sulfachloropyridazine	Premi®test	DSM	Serum	20,000
			Urine	100
Sulfadiazine* (unapproved in dairy cattle)	Charm II Sulfonamide Test	Charm Sciences	Serum	150
			Urine	500
	Charm KIS Test	Charm Sciences	Serum	100
			Urine	1000
Sulfadimethoxine	Charm II Sulfonamide Test	Charm Sciences	Serum	150
			Urine	500
	Charm KIS Test	Charm Sciences	Serum	200
			Urine	2000
	Charm ROSA SDSM Test	Charm Sciences	Urine	400
Premi®test	DSM	Urine	100	
Sulfadoxine* (unapproved in dairy cattle)	Charm II Sulfonamide Test	Charm Sciences	Serum	300
			Urine	800
	Charm KIS Test	Charm Sciences	Serum	50
			Urine	500
Sulfamerazine* (unapproved in dairy cattle)	Charm II Sulfonamide Test	Charm Sciences	Serum	150
			Urine	500
	Charm KIS Test	Charm Sciences	Serum	50
			Urine	500
Sulfamethazine ^{oe} (unapproved in dairy cattle)	Charm II Sulfonamide Test	Charm Sciences	Serum	400
			Urine	1250
	Charm KIS Test	Charm Sciences	Serum	100
			Urine	1000
	Charm ROSA Sulfamethazine	Charm Sciences	Urine	250
	Charm ROSA SDSM Test	Charm Sciences	Urine	400
Premi®test	DSM	Urine	100	
Sulfamethizole (unapproved in dairy cattle)	Charm II Sulfonamide Test	Charm Sciences	Serum	300
			Urine	1600
	Charm KIS Test	Charm Sciences	Serum	50
			Urine	500

* Prohibited from use of any kind in lactating cattle.

‡ Predicts pass or fail on USDA tissue residue tests.

^{oe} Sulfamethazine is prohibited for use in female dairy cattle 20 months of age or older.

Serum and Urine Screening Tests

Screening Tests Available as of August 2010

Residues Sensitivity Detected	Test Name	Sponsor	Specimen	(ppb)
Sulfamethoxazole* (unapproved in dairy cattle)	Charm II Sulfonamide Test	Charm Sciences	Serum	120
			Urine	300
	Charm KIS Test	Charm Sciences	Serum	50
			Urine	500
Sulfanilamide* (unapproved in dairy cattle)	Charm II Sulfonamide Test	Charm Sciences	Serum	1600
			Urine	4000
	Charm KIS Test	Charm Sciences	Serum	250
			Urine	2500
Sulfapyridine* (unapproved in dairy cattle)	Charm II Sulfonamide Test	Charm Sciences	Serum	400
			Urine	1000
	Charm KIS Test	Charm Sciences	Serum	100
			Urine	1000
Sulfathiazole* (unapproved in dairy cattle)	Charm II Sulfonamide Test	Charm Sciences	Serum	300
			Urine	1000
	Charm KIS Test	Charm Sciences	Serum	50
			Urine	500
Sulfisoxazole* (unapproved in dairy cattle)	Charm II Sulfonamide Test	Charm Sciences	Serum	250
			Urine	600
	Charm KIS Test	Charm Sciences	Serum	50
			Urine	500
Tetracycline (prohibited as feed additive for lactating dairy cows)	Charm II Tetracycline Test	Charm Sciences	Serum	40
			Urine	600
	Charm KIS Test	Charm Sciences	Serum	1000
			Urine	10,000
Charm ROSA Tetracycline Test	Charm ROSA Tetracycline Test	Charm Sciences	Urine	600
Tilmicosin	Premi [®] test	DSM	Urine	50
Tulathromycin (unapproved in dairy cattle)	Charm II Macrolide Test	Charm Sciences	Serum	500
			Urine	500
	Charm KIS Test	Charm Sciences	Serum	2000
			Urine	20,000
Premi [®] test	Premi [®] test	DSM	Urine	18,000
Tylosin	Charm II Macrolide Test	Charm Sciences	Serum	2000
			Urine	2000
	Charm KIS Test	Charm Sciences	Serum	500
			Urine	5000
Premi [®] test	Premi [®] test	DSM	Urine	50

*Prohibited from use of any kind in lactating cattle.

Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)
2, 4-D	100 [#]	2,4-D RaPID Assay®	Strategic Diagnostics, Inc.	50.0
Aflatoxin M1	0.5	Charm II Aflatoxin Test (Competitive)	Charm Sciences	0.5
		Charm II Aflatoxin Test (Sequential)	Charm Sciences	0.5
		Charm ROSA SL Aflatoxin Test (Quantitative)	Charm Sciences	0.5
		SNAP Aflatoxin M1	IDEXX Labs, Inc.	0.5
Amoxicillin	10 [#]	BetaStar US Beta-lactam Test	Neogen Corporation	6.0
		Charm II Beta-lactam Test (Competitive) (FDA-Approved)	Charm Sciences	7.5 •
		Charm II Beta-lactam Test (Quantitative) (FDA-Approved)	Charm Sciences	8.1 •
		Charm II Beta-lactam Test (Sequential) (FDA-Approved)	Charm Sciences	8.1 •
		Charm <i>B. stearothermophilus</i> Tablet Disc Assay (FDA-Approved)	Charm Sciences	7.5 •
		Charm Cowside II Test	Charm Sciences	4.0
		Charm HPLC-Receptorgram	Charm Sciences	10.0
		Charm SL Beta-lactam Test (FDA-Approved)	Charm Sciences	5.6 •
		Charm 3 SL3 Beta-lactam Test (FDA Approval pending)	Charm Sciences	8.4
		Charm SL3 Beta-lactam Test (FDA-Approved)	Charm Sciences	7.8 •
		Charm SL6 Beta-lactam Test (FDA-Approved)	Charm Sciences	7.1 •
		Charm Flunixin and Beta-lactam Test	Charm Sciences	9.0
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	4.6 •
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	7.7 •
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	6.0 •
		Delvotest SP-NT	DSM Food Specialties	2-3.0
		New SNAP Beta-Lactam (Reader, FDA-Approved)	IDEXX Labs, Inc.	7.3
		New SNAP Beta-Lactam (Visual)	IDEXX Labs, Inc.	6.9
		Penzyme® Milk Test	Neogen Corporation	6.0
		Ampicillin	10 [#]	BetaStar US Beta-lactam Test
Charm II Beta-lactam Test (Competitive) (FDA-Approved)	Charm Sciences			5.7 •
Charm II Beta-lactam Test (Quantitative) (FDA-Approved)	Charm Sciences			6.6 •
Charm II Beta-lactam Test (Sequential) (FDA-Approved)	Charm Sciences			6.6 •
Charm Cowside II Test	Charm Sciences			4.0
Charm <i>B. stearothermophilus</i> Tablet Disc Assay (FDA-Approved)	Charm Sciences			6.7 •
Charm HPLC-Receptorgram	Charm Sciences			2.0
Charm SL Beta-lactam Test (FDA-Approved)	Charm Sciences			8.5 •

Tolerance is the maximum legally allowable level or concentration of a drug or chemical in a food product at the time milk is marketed or the animal is slaughtered.
 • Sensitivities based on evaluations of raw commingled bovine milk samples by test sponsors, independent laboratories, and FDA and reported in FDA memo M-α-85 Revision #13 and FDA memorandum (1/04/10).

Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)
Ampicillin (cont.)	10 [#]	Charm 3 SL3 Beta-lactam Test (FDA Approval pending)	Charm Sciences	8.0
		Charm SL3 Beta-lactam Test (FDA-Approved)	Charm Sciences	8.7 •
		Charm SL6 Beta-lactam Test (FDA-Approved)	Charm Sciences	9.6 •
		Charm Flunixin and Beta-lactam Test	Charm Sciences	8.0
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	4.0 •
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	5.1 •
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	7.9 •
		Delvotest SP-NT	DSM Food Specialties	4.0
		New SNAP Beta-Lactam (Reader, FDA-Approved)	IDEXX Labs, Inc.	5.8 •
		New SNAP Beta-Lactam (Visual)	IDEXX Labs, Inc.	6.2
		Penzyme [®] Milk Test	Neogen Corporation	7.0
Atrazine	20 [#]	Atrazine RaPID Assay [®]	Strategic Diagnostics, Inc.	5.0
Bacitracin (unapproved in lactating dairy cows)	500 [#]	Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	1000>
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	1000>
Carbendazim	20 [#]	Benomyl RaPID Assay [®]	Strategic Diagnostics, Inc.	5.0
Ceftiofur	100 [£]	Charm II Beta-lactam Test (Competitive) (FDA-Approved)	Charm Sciences	47 •
		Charm II Beta-lactam Test (Quantitative) (FDA-Approved)	Charm Sciences	58 •
		Charm II Beta-lactam Test (Sequential) (FDA-Approved)	Charm Sciences	58 •
		Charm Cowside II Test	Charm Sciences	> 100
		Charm <i>B. stearothermophilus</i> Tablet Disc Assay	Charm Sciences	> 100 •
		Charm HPLC-Receptorgram	Charm Sciences	30-40
		Charm SL Beta-lactam Test (FDA-Approved)	Charm Sciences	77 •
		Charm 3 SL3 Beta-lactam Test (FDA Approval Pending)	Charm Sciences	79
		Charm SL3 Beta-lactam Test (FDA-Approved)	Charm Sciences	51 •
		Charm SL6 Beta-lactam Test (FDA-Approved)	Charm Sciences	72 •
		Charm Flunixin and Beta-lactam Test	Charm Sciences	75
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	> 100
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	> 100
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	> 100
		Delvotest SP-NT	DSM Food Specialties	25-50
		New SNAP Beta-Lactam (Reader, FDA-Approved)	IDEXX Labs, Inc.	12

Tolerance is the maximum legally allowable level or concentration of a drug or chemical in a food product at the time milk is marketed or the animal is slaughtered.

• Sensitivities based on evaluations of raw commingled bovine milk samples by test sponsors, independent laboratories, and FDA and reported in FDA memo M-8-85 Revision #13 and FDA memorandum (1/04/10).

£ The tolerance was established for the marker residue, not the parent compound. The ceftiofur tolerance has been changed from 50 ppb ceftiofur (parent drug) to 100 ppb ceftiofur marker residue (DCA, desfuroylceftiofur metabolite derivative).

Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)		
Cephalexin (unapproved in dairy cattle)	None [¥]	Charm II Beta-lactam Test (Competitive) (FDA-Approved)	Charm Sciences	45		
		Charm II Beta-lactam Test (Sequential) (FDA-Approved)	Charm Sciences	40		
		Charm II Beta-lactam Test (Quantitative) (FDA-Approved)	Charm Sciences	40		
		Charm Cowside II Test	Charm Sciences	50		
		Charm <i>B. stearothermophilus</i> Tablet Disc Assay	Charm Sciences	85		
		Charm SL Beta-lactam Test (FDA-Approved)	Charm Sciences	50		
		Charm 3 SL3 Beta-lactam Test (FDA Approval Pending)	Charm Sciences	3000		
		Charm SL3 Beta-lactam Test (FDA-Approved)	Charm Sciences	70		
		Charm SL6 Beta-lactam Test (FDA-Approved)	Charm Sciences	50		
		Charm Flunixin and Beta-lactam Test	Charm Sciences	70		
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	60-100		
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	60-100		
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	60-100		
		Cephapirin	20 [#]	BetaStar US Bet-lactam Test	Neogen Corporation	19.5
				Charm II Beta-lactam Test (Competitive) (FDA-Approved)	Charm Sciences	4.2 •
Charm II Beta-lactam Test (Quantitative) (FDA-Approved)	Charm Sciences			4.1 •		
Charm II Beta-lactam Test (Sequential) (FDA-Approved)	Charm Sciences			4.1		
Charm <i>B. stearothermophilus</i> Tablet Disc Assay (FDA-Approved)	Charm Sciences			11.7 •		
Charm Cowside II Test	Charm Sciences			10		
Charm HPLC-Receptorgram	Charm Sciences			2		
Charm SL Beta-lactam Test (FDA-Approved)	Charm Sciences			13.7 •		
Charm 3 SL3 Beta-lactam Test (FDA Approval Pending)	Charm Sciences			20.0		
Charm SL3 Beta-lactam Test (FDA-Approved)	Charm Sciences			16.0 •		
Charm SL6 Beta-lactam Test (FDA-Approved)	Charm Sciences			18.7 •		
Charm Flunixin and Beta-lactam Test	Charm Sciences			18		
Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties			8.2 •		
Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties			7.0		
Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties			7.7 •		
Delvotest SP-NT	DSM Food Specialties			4-6		

¥ No official tolerance or "safe levels" have been established by the FDA.

Tolerance is the maximum legally allowable level or concentration of a drug or chemical in a food product at the time milk is marketed or the animal is slaughtered.

• Sensitivities based on evaluations of raw commingled bovine milk samples by test sponsors, independent laboratories, and FDA and reported in FDA memo M-a-85 Revision #13 and FDA memorandum (1/04/10).

Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)
Cephapirin (continued)	20 [#]	New SNAP Beta-Lactam (Reader, FDA-Approved)	IDEXX Labs, Inc.	11.7
		New SNAP Beta-Lactam (Visual)	IDEXX Labs, Inc.	11.9
		Penzyme [®] Milk Test	Neogen Corporation	11.6
Chloramphenicol [Ⓓ] (prohibited in food producing animals)	None ^ŷ	Charm II Chloramphenicol Test	Charm Sciences	0.1
		Charm II Amphenicol Test (FDA-Approved)	Charm Sciences	1.0
		Charm <i>B. stearothersophilus</i> Tablet Disc Assay	Charm Sciences	20000
		Charm HPLC-Receptorgram	Charm Sciences	1.0
		Charm ROSA Chloramphenicol Test	Charm Sciences	0.1
Chlortetracycline (prohibited as feed additive in lactating dairy cattle)	300 [^]	Charm II Tetracycline Drug Test (Competitive Assay) (FDA-Approved)	Charm Sciences	257 •
		Charm <i>B. stearothersophilus</i> Tablet Disc Assay	Charm Sciences	1000 †
		Charm Cowside II Test	Charm Sciences	100
		Charm HPLC-Receptorgram	Charm Sciences	15
		Charm ROSA Tetracycline Test	Charm Sciences	250
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	250-300
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	250-300
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	250-300
		SNAP Tetracycline **	IDEXX Labs, Inc.	100
Clindamycin (unapproved in dairy cattle)	None ^ŷ	Charm II Macrolide Test	Charm Sciences	50
Cloxacillin	10 [#]	BetaStar US Beta-lactam Test	Neogen Corporation	9.1
		Charm II for Cloxacillin in Milk (Competitive) (FDA-Approved)	Charm Sciences	8.5 •
		Charm II Beta-lactam Test (Competitive) (FDA-Approved)	Charm Sciences	70♦♦
		Charm II Beta-lactam Test (Quantitative) (FDA-Approved)	Charm Sciences	8.5 •
		Charm II Beta-lactam Test (Sequential) (FDA-Approved)	CharmSciences	50♦♦
		Charm <i>B. stearothersophilus</i> Tablet Disc Assay	Charm Sciences	48♦♦
		Charm Cowside II Test	Charm Sciences	25
		Charm HPLC-Receptorgram	Charm Sciences	10
		Charm SL Beta-lactam Test (FDA-Approved)	Charm Sciences	50♦
		Charm 3 SL3 Beta-lactam Test (FDA Approval Pending)	Charm Sciences	8.6
		Charm SL3 Beta-lactam Test (FDA-Approved)	Charm Sciences	100♦♦
		Charm SL6 Beta-lactam Test (FDA-Approved)	Charm Sciences	8.3 •
		Charm Flunixin and Beta-lactam Test	Charm Sciences	50 [Ⓓ]

Ⓓ The use of chloramphenicol in any food-producing animal is strictly forbidden under federal law. Consider testing for chloramphenicol in purchased new additions to the lactating herd or in other instances where the drug-treatment history is unknown.

ŷ No official tolerance or "safe levels" have been established by the FDA.

^ Values indicate the FDA-established "safe levels" and do not represent official tolerance levels. "Safe levels" are used by the FDA as guides for deciding whether or not to prosecute. They are not and cannot be transformed into tolerances that are established for animal drugs under section 512 (b) of the Federal Food, Drug & Cosmetic Act. They are not binding, do not dictate any result, do not limit the FDA's discretion in any way, and do not protect milk producers (or milk) from court enforcement action.

Tolerance is the maximum legally allowable level or concentration of a drug or chemical in a food product at the time milk is marketed or the animal is slaughtered.

♦ Sensitivities based on evaluations of raw commingled bovine milk samples by test sponsors, independent laboratories, and FDA and reported in FDA memo M-a-85 Revision #13 and FDA memorandum (1/04/10).

† The sensitivity of the test method was determined by independent research at Virginia Polytechnic Institute and State Univ.

♦♦ 90/95% concentrations were not determined for sensitivities significantly above the tolerance/safe level.

Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)	
Cloxacillin (continued)	10 [#]	Delvo P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	25 ^{♦♦}	
		Delvo SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	20 ^{♦♦}	
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	30 [♦]	
		Delvotest SP-NT	DSM Food Specialties	20	
		New SNAP Beta-Lactam (FDA-Approved)	IDEXX Labs, Inc.	50 ^{♦♦}	
Dicloxacillin (unapproved in dairy cattle)	None [‡]	Charm II for Cloxacillin in Milk (FDA-Approved)	Charm Sciences	9	
		Charm II Beta-Lactam Test (Competitive)	Charm Sciences	45	
		Charm II Beta-Lactam Test (Quantitative)	Charm Sciences	5	
		Charm II Beta-Lactam Test (Sequential)	Charm Sciences	45	
		Charm <i>B. stearothermophilus</i> Tablet Disc Assay	Charm Sciences	40	
		Charm Cowside II Test	Charm Sciences	10	
		Charm HPLC Receptorgram	Charm Sciences	10	
		Charm SL Beta-lactam Test (FDA-Approved)	Charm Sciences	50	
		Charm 3 SL3 Beta-lactam Test (FDA Approval Pending)	Charm Sciences	7	
		Charm SL3 Beta-lactam Test (FDA-Approved)	Charm Sciences	75	
		Charm SL6 Beta-lactam Test	Charm Sciences	5	
		Charm Flunixin and Beta-lactam Test	Charm Sciences	50	
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	20	
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	15	
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	20	
		Delvotest SP-NT	DSM Food Specialties	10	
		New SNAP Beta-Lactam (FDA-Approved)	IDEXX Labs, Inc.	50	
		Dihydrostreptomycin 1.25 [^]		Charm II Streptomycin Test	Charm Sciences
Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties			5000	

Tolerance is the maximum legally allowable level or concentration of a drug or chemical in a food product at the time milk is marketed or the animal is slaughtered.

‡ No official tolerance or "safe levels" have been established by the FDA.

♦ Sensitivities based on evaluations of raw commingled bovine milk samples by test sponsors, independent laboratories, and FDA and reported in FDA memo M-α-85 Revision #12 and FDA memorandum (10/01/07).

† The sensitivity of the test method was determined by independent research at Virginia Polytechnic Institute and State Univ.

^ Values indicate the FDA-established "safe levels" and do not represent official tolerance levels. "Safe levels" are used by the FDA as guides for deciding whether or not to prosecute.

They are not and cannot be transformed into tolerances that are established for animal drugs under section 512 (b) of the Federal Food, Drug & Cosmetic Act. They are not binding, do not dictate any result, do not limit the FDA's discretion in any way, and do not protect milk producers (or milk) from court enforcement action.

♦♦ 90/95% concentrations were not determined for sensitivities significantly above the tolerance/safe level.

Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)
Enrofloxacin (prohibited in food producing animals)	None	Charm Enroflox Test (ROSA Test)	Charm Sciences	7
Erythromycin	50 [^]	Charm II Macrolide Test	Charm Sciences	25 [†]
		Charm <i>B. stearothermophilus</i> Tablet Disc Assay	Charm Sciences	400 [†]
		Charm Cowside II Test	Charm Sciences	100
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	500
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	250
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	500-1500
		Delvotest SP-NT	DSM Food Specialties	40-80
Florfenicol (unapproved in lactating cows, consult with your veterinarian)	None	Charm II Amphenicol Test (FDA-Approved)	Charm Sciences	40
Flunixin	2	Charm Flunixin and Beta-Lactam Test	Charm Sciences	1
Gentamicin (AVMA, AABP and Academy of Veterinary Consultants [AVC] advocate their members voluntarily refrain from use)	30 [^]	Charm II Gentamicin and Neomycin Test	Charm Sciences	24
		Charm II Gentamicin and Streptomycin Test	Charm Sciences	30 [†]
		Charm Cowside II Test	Charm Sciences	100
		SNAP Gentamicin	IDEXX Labs, Inc.	30 [†]
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	1000
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	400
Hetacillin	None [‡]	Charm Cowside II Test	Charm Sciences	3
		Charm II Beta-lactam Test (Competitive) (FDA-Approved)	Charm Sciences	7.5
		Charm II Beta-lactam Test (Quantitative) (FDA-Approved)	Charm Sciences	7.5
		Charm II Beta-lactam Test (Sequential) (FDA-Approved)	Charm Sciences	7.5
		Charm <i>B. stearothermophilus</i> Tablet Disc Assay (FDA-Approved)	Charm Sciences	7.5
		Charm SL Beta-lactam Test (FDA-Approved)	Charm Sciences	7.5
		Charm 3 SL3 Beta-lactam Test	Charm Sciences	8

[†] The sensitivity of the test method was determined by independent research at Virginia Polytechnic Institute and State Univ.

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[‡] No official tolerance or "safe levels" have been established by the FDA.

Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)
Hetacillin (continued)	None ^ŷ	(FDA Approval Pending)		
		Charm SL3 Beta-lactam Test (FDA-Approved)	Charm Sciences	5
		Charm SL6 Beta-lactam Test (FDA-Approved)	Charm Sciences	7.5
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	5
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	5
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	5
Kanamycin (AVMA, AABP and Academy of Veterinary Consultants [AVC] advocate their members voluntarily refrain from use)	None ^ŷ	Charm II Gentamicin and Streptomycin Test	Charm Sciences	1000
		Charm <i>B. stearothersophilus</i> Tablet Disc Assay	Charm Sciences	1000
Lincomycin (unapproved in dairy cattle)	150 [#]	Charm Cowside II Test	Charm Sciences	150
		Charm II Macrolide Test	Charm Sciences	100
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	400-1000
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	400-1000
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	300-400
Neomycin (AVMA, AABP and Academy of Veterinary Consultants [AVC] advocate their members voluntarily refrain from use)	150 [#]	Charm II Gentamicin and Neomycin Test	Charm Sciences	20 †
		Charm Cowside II Test	Charm Sciences	150
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	1000-5000 †
		Delvotest SP-NT	DSM Food Specialties	100-200
Novobiocin	100 [#]	Charm II Novobiocin Test	Charm Sciences	100 †
		Charm <i>B. stearothersophilus</i> Tablet Disc Assay	Charm Sciences	1000 †
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	600
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	600
Oxytetracycline (prohibited as feed additive for lactating dairy cattle)	300 [^]	Charm II Tetracycline Drug Test (Competitive Assay) (FDA-Approved)	Charm Sciences	119 •
		Charm Cowside II Test	Charm Sciences	100
		Charm <i>B. stearothersophilus</i> Tablet Disc Assay	Charm Sciences	1000 †
		Charm HPLC-Receptorgram	Charm Sciences	15

^ŷ No official tolerance or "safe levels" have been established by the FDA.

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[†] The sensitivity of the test method was determined by independent research at Virginia Polytechnic Institute and State Univ.

• Sensitivities based on evaluations of raw commingled bovine milk samples by test sponsors, independent laboratories, and FDA and reported in FDA memo M-ra-85 Revision #13 and FDA memorandum (01/04/10).

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Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)		
Oxytetracycline (continued) (prohibited as feed additive for lactating dairy cattle)	300 [^]	Charm ROSA Tetracycline Test	Charm Sciences	250		
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	300		
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	400		
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	400		
		Delvotest SP-NT	DSM Food Specialties	250-500		
		SNAP Tetracycline**	IDEXX Labs, Inc.	50		
** Optional dilution protocol available to decrease sensitivity threefold (See packaging insert for optional dilution protocols).						
Penicillin	5 [^]	BetaStar US Beta-lactam Test	Neogen Corporation	4.8		
		Charm II Beta-lactam Test (Competitive)(FDA-Approved)	Charm Sciences	3.0 •		
		Charm II Beta-lactam Test (Quantitative) (FDA-Approved)	Charm Sciences	3.4 •		
		Charm II Beta-lactam Test (Sequential) (FDA-Approved)	Charm Sciences	3.4 •		
		Charm Cowside II Test	Charm Sciences	3.0		
		Charm <i>B. stearothermophilus</i> Tablet Disc Assay (FDA-Approved)	Charm Sciences	3.8 •		
		Charm HPLC-Receptorgram	Charm Sciences	5.0		
		Charm SL Beta-lactam Test (FDA-Approved)	Charm Sciences	3.6 •		
		Charm 3 SL# Beta-lactam Test (FDA Approval Pending)	Charm Sciences	3.8		
		Charm SL3 Beta-lactam Test (FDA-Approved)	Charm Sciences	4.2 •		
		Charm SL6 Beta-lactam Test (FDA-Approved)	Charm Sciences	4.2 •		
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	2.1 •		
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	3.1 •		
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	2.7 •		
		Delvotest SP-NT	DSM Food Specialties	1-2		
		New SNAP Beta-Lactam (Reader, FDA-Approved)	IDEXX Labs, Inc.	3.0		
		New SNAP Beta-Lactam (Visual)	IDEXX Labs, Inc.	3.1		
		Penzyme® Milk Test	Neogen Corporation	5.0		
		Pirlimycin	400 [#]	Charm II Macrolide Test	Charm Sciences	80
				Charm Cowside II Test	Charm Sciences	50
Charm <i>B. stearothermophilus</i> Tablet Disc Assay (FDA-Approved)	Charm Sciences			100		
Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties			80		

Tolerance is the maximum legally allowable level or concentration of a drug or chemical in a food product at the time milk is marketed or the animal is slaughtered.

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• Sensitivities based on evaluations of raw commingled bovine milk samples by test sponsors, independent laboratories, and FDA and reported in FDA memo M-ta-85 Revision #12 and FDA memorandum (10/01/07).

Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)
Pirlimycin (continued)	400 [#]	Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	80
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	50
Polymixin B	None [‡]	Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	30
Spectinomycin	None [‡]	Charm Cowside II Test	Charm Sciences	1000
		Charm <i>B. stearothersophilus</i> Tablet Disc Assay	Charm Sciences	1000 [†]
Streptomycin (AVMA, AABP and Academy of Veterinary Consultants [AVC] advocate their members voluntarily refrain from use)	None [‡]	Charm II Gentamicin and Streptomycin Test	Charm Sciences	20 [†]
		Charm Cowside II Test	Charm Sciences	1000
		Charm <i>B. stearothersophilus</i> Tablet Disc Assay	Charm Sciences	1000 [†]
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	4000
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	4000
Sulfachlorpyridazine (unapproved in lactating dairy cattle)	10 [^]	Charm II Sulfa Drug Test	Charm Sciences	5
		Charm Cowside II Test	Charm Sciences	50
		Charm ROSA Sulfa Test	Charm sciences	3
		Charm HPLC Receptorgram	Charm Sciences	10
Sulfadiazine (unapproved in lactating dairy cattle)	10 [^]	Charm II Sulfa Drug Test (Competitive Assay) (FDA-Approved)	Charm Sciences	4.9 [*]
		Charm Cowside II Test	Charm Sciences	50
		Charm HPLC-Receptorgram	Charm Sciences	5
		Charm ROSA Sulfa Test	Charm Sciences	2
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	100
Sulfadimethoxine	10 [#]	Delvotest SP-NT	DSM Food Specialties	25-50
		Charm ROSA SDSM Test	Charm Sciences	6.7
		Charm II Sulfa Drug Test (Competitive Assay) (FDA-Approved)	Charm Sciences	4.0 [*]
		Charm Cowside II Test	Charm Sciences	25
		Charm ROSA Sulfa Test	Charm Sciences	1
Sulfadoxine (unapproved in lactating dairy cattle)	None [‡]	Charm <i>B. stearothersophilus</i> Tablet Disc Assay	Charm Sciences	10,000
		Charm HPLC-Receptorgram	Charm Sciences	5
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	100
		Charm ROSA Sulfa Test	Charm Sciences	2
		Charm Cowside II Test	Charm Sciences	100
Sulfamerazine (unapproved in lactating dairy cattle)	10 [^]	Charm II Sulfa Drug Test	Charm Sciences	7
		Charm ROSA Sulfa Test	Charm Sciences	2
		Charm Cowside II Test	Charm Sciences	100
		Charm HPLC-Receptorgram	Charm Sciences	5

[‡] No official tolerance or "safe levels" have been established by the FDA.

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[†] The sensitivity of the test method was determined by independent research at Virginia Polytechnic Institute and State Univ.

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Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)
Sulfamethazine* (unapproved in lactating dairy cattle)	10 [^]	Charm II Sulfa Drug Test (Competitive Assay) (FDA-Approved)	Charm Sciences	9.4 •
		Charm ROSA Sulfamethazine Test	Charm Sciences	7.5
		Charm ROSA SDSM Test	Charm Sciences	6.2
		Charm Cowside II Test	Charm Sciences	100
		Charm ROSA Sulfa Test	Charm Sciences	6
		Charm HPLC-Receptorgram	Charm Sciences	5
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	100
		Delvotest SP-NT	DSM Food Specialties	25-100
		SNAP Sulfamethazine Test	IDEXX Labs, Inc.	10
Sulfamethizole* (unapproved in lactating dairy cattle)	10 [^]	Charm II Sulfa Drug Test	Charm Sciences	6 †
		Charm Cowside II Test	Charm Sciences	20
		Charm ROSA Sulfa Test	Charm Sciences	1
		Charm HPLC-Receptorgram	Charm Sciences	5
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	100
Sulfamethoxazole* (unapproved in lactating dairy cattle)	None [‡]	Charm II Sulfa Drug Test	Charm Sciences	20 †
		Charm Cowside II Test	Charm Sciences	50
		Charm ROSA Sulfa Test	Charm Sciences	2
		Charm HPLC-Receptorgram	Charm Sciences	5
Sulfanilamide (unapproved in lactating dairy cattle)	10 [#]	Charm II Sulfa Drug Test	Charm Sciences	20
		Charm Cowside II Test	Charm Sciences	200
		Charm ROSA Sulfa Test	Charm Sciences	50
		Charm HPLC-Receptorgram	Charm Sciences	10
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	1000
Sulfapyridine (unapproved in lactating dairy cattle)	10 [#]	Charm II Sulfa Drug Test	Charm Sciences	10
		Charm Cowside II Test	Charm Sciences	100
		Charm ROSA Sulfa Test	Charm Sciences	10
		Charm HPLC-Receptorgram	Charm Sciences	5
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	250
Sulfathiazole (unapproved in lactating dairy cattle)	10 [^]	Charm II Sulfa Drug Test (Competitive Assay) (FDA-Approved)	Charm Sciences	7.3 •
		Charm Cowside II Test	Charm Sciences	50
		Charm ROSA Sulfa Test	Charm Sciences	1
		Charm HPLC-Receptorgram	Charm Sciences	5
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	100
Sulfisoxazole (unapproved in lactating dairy cattle)	None [‡]	Charm II Sulfa Drug Test	Charm Sciences	6
		Charm Cowside II Test	Charm Sciences	50
		Charm ROSA Sulfa Test	Charm Sciences	15
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	100

• Sulfamethazine is illegal for use in female dairy cattle 20 months of age or older.

* Prohibited from use of any kind in lactating dairy cattle.

‡ No official tolerance or "safe levels" have been established by the FDA.

† The sensitivity of the test method was determined by independent research at Virginia Polytechnic Institute and State Univ.

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Milk Screening Tests

Not all of the tests listed below are approved by the FDA for residual testing. 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 (ppb)	Test Name	Sponsor	Sensitivity (ppb)
Tetracycline (prohibited as feed additive for lactating dairy cows)	300 [^]	Charm II Tetracycline Drug Test (Competitive Assay) (FDA-Approved)	Charm Sciences	67 [•]
		Charm Cowside II Test	Charm Sciences	100
		Charm <i>B. stearothermophilus</i> Tablet Disc Assay	Charm Sciences	1000
		Charm HPLC-Receptorgram	Charm Sciences	5
		Charm ROSA Tetracycline Test	Charm Sciences	90
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	300
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	300
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	400
		Delvotest SP-NT	DSM Food Specialties	250-500
		SNAP Tetracycline ^{**}	IDEXX Labs, Inc.	50
** Optional dilution protocol available to decrease sensitivity threefold (See packaging insert for optional dilution protocols).				
Tilmicosin	None	Charm II Macrolide Test	Charm Sciences	20
		Charm Cowside II Test	Charm Sciences	50
Tulathromycin (unapproved in lactating dairy cattle)	None	Charm II Macrolide Test	Charm Sciences	20
Tylosin (unapproved in lactating dairy cows)	50 [#]	Charm II Macrolide Test	Charm Sciences	50 [†]
		Charm Cowside II Test	Charm Sciences	30
		Delvotest P/Delvotest P Mini (FDA-Approved)	DSM Food Specialties	100
		Delvotest P 5 Pack (FDA-Approved)	DSM Food Specialties	100
		Delvotest SP/Delvotest SP Mini (FDA-Approved)	DSM Food Specialties	100
		Delvotest SP-NT (FDA-Approved)	DSM Food Specialties	30

† The sensitivity of the test method was determined by independent research at Virginia Polytechnic Institute and State Univ.

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• Sensitivities based on evaluations of raw commingled bovine milk samples by test sponsors, independent laboratories, and FDA and reported in FDA memo M-α-85 Revision #13 and FDA memorandum (01/04/10).

Tolerance is the maximum legally allowable level or concentration of a drug or chemical in a food product at the time milk is marketed or the animal is slaughtered.

Milk Screening Tests

Screening Tests Available as of August 2010 for Detecting Drug Residues in Bulk Tank Milk.

Only Use Drugs Approved for Lactating Dairy Cows.

Tests listed below are approved by the FDA for residual testing. These tests are believed to be reliable indicators of antibiotic contamination in milk and should be viewed as tools to screen bulk tank milk.

Test Name	Residues Detected At or Below Safe Tolerance Levels
BetaStar US Beta-lactam Test (FDA-Approved)	Amoxicillin, Ampicillin, Cephapirin, Cloxacillin, Penicillin
Charm II Beta-lactam Test (Competitive) (FDA-Approved)	Amoxicillin, Ampicillin, Ceftiofur, Cephapirin, Hetacillin, Penicillin
Charm II Beta-lactam Test (Quantitative) (FDA-Approved)	Amoxicillin, Ampicillin, Ceftiofur, Cephapirin, Cloxacillin, Hetacillin, Penicillin
Charm II Beta-lactam Test (Sequential) (FDA-Approved)	Amoxicillin, Ampicillin, Ceftiofur, Cephapirin, Hetacillin, Penicillin
Charm <i>B. stearothermophilus</i> Tablet Disc Assay (FDA-Approved)	Amoxicillin, Ampicillin, Cephapirin, Hetacillin, Penicillin, Pirlimycin
Charm SL Beta-lactam Test (FDA-Approved)	Amoxicillin, Ampicillin, Ceftiofur, Cephapirin, Hetacillin, Penicillin
Charm 3 SL3 Beta-lactam Test (FDA Approval Pending)	Amoxicillin, Ampicillin, Ceftiofur, Cepapirin, Cloxacillin, Hetacillin, Penicillin
Charm SL3 Beta-lactam Test (FDA-Approved)	Amoxicillin, Ampicillin, Ceftiofur, Cephapirin, Hetacillin, Penicillin
Charm SL6 Beta-lactam Test (FDA-Approved)	Amoxicillin, Ampicillin, Ceftiofur, Cephapirin, Cloxacillin, Hetacillin, Penicillin
Charm II Test for Cloxacillin in Milk (Competitive Assay) (FDA-Approved)	Cloxacillin
Charm II Sulfa Drug Test (Competitive Assay) (FDA-Approved)	Sulfadimethoxine
Charm II Tetracycline Test (FDA-Approved)	Oxytetracycline
Delvotest P 5 Pack (FDA-Approved)	Amoxicillin, Ampicillin, Cephapirin, Penicillin, Pirlimycin, Tetracycline
Delvotest P/Delvotest P Mini (FDA-Approved)	Amoxicillin, Ampicillin, Cephapirin, Penicillin, Pirlimycin, Tetracycline
Delvotest SP/Delvotest SP Mini (FDA-Approved)	Amoxicillin, Ampicillin, Cephapirin, Penicillin, Pirlimycin, Tetracyclin
New SNAP Beta-Lactam Test Kit (Reader, FDA-Approved)	Amoxicillin, Ampicillin, Ceftiofur, Cephapirin, Penicillin

Milk Screening Tests

Screening Tests Available as of August 2010 for Detecting Drug Residues in Bulk Tank Milk.

Only Use Drugs Approved for Lactating Dairy Cows.

Tests listed below are NOT APPROVED by the FDA for residual testing.

Test Name	Residues Detected At or Below Safe Tolerance Levels
2,4 D RaPID Assay	2,4-D
Charm Cowside II Test	Amoxicillin, Ampicillin, Cephapirin, Chlortetracycline, Gentamicin, Hetacillin, Noemycin, Oxytetracycline, Penicillin, Pirlimycin, Tetracycline, Tylosin
Charm Flunixin and Beta-lactam Test	Amoxicillin, Ampicillin, Ceftiofur, Cephapirin, Cloxacillin, Penicillin
Charm HPLC-Receptorgram	Amoxicillin, Ampicillin, Ceftiofur, Cephapirin, Cloxacillin, Penicillin, Sulfadimethoxine, Oxytetracycline
Charm II Gentamicin and Neomycin Test	Gentamicin, Neomycin
Charm II Novobiocin Test	Novobiocin
Charm II Macrolide Test	Erythromycin, Pirlimycin
Charm ROSA SDSM Test	Sulfadimethoxine
Charm ROSA Sulfa Test	Sulfadimethoxine
Charm II Streptomycin Test	Dihydrostreptomycin, Gentamicin
Charm ROSA Streptomycin Test	Dihydrostreptomycin
Charm ROSA Tetracycline Test	Chlortetracycline, Oxytetracycline, Tetracycline
Charm II Aflatoxin Test	Aflatoxin M1
Charm ROSA Aflatoxin Test (Quantitative)	Aflatoxin M1
Penzyme [®] Milk Test	Amoxicillin, Ampicillin, Cephapirin, Penicillin
SNAP Tetracycline Test	Chlortetracycline, Oxytetracycline, Tetracycline
SNAP Aflatoxin M1 Test	Aflatoxin M1
SNAP Gentamicin Test	Gentamicin
SNAP Sulfamethazine Test	Sulfamethazine
Atrazine RaPID Assay	Atrazine
Benomyl RaPID Assay	Carbendazim

Address and Telephone Numbers of Companies Marketing Drug Residue Tests

Charm Sciences Inc.

659 Andover St.
Lawrence, MA 01843
Phone: 800-343-2170

SILVER LAKE Research Corporation

911 So. Primrose Ave. Ste. N
Monrovia, CA 91016
Phone: 888-438-1942

DSM Food Specialties USA, Inc.

45 Waterview Blvd.
Parsippany, NJ 07054
Phone: 800-662-4478

Strategic Diagnostics, Inc.

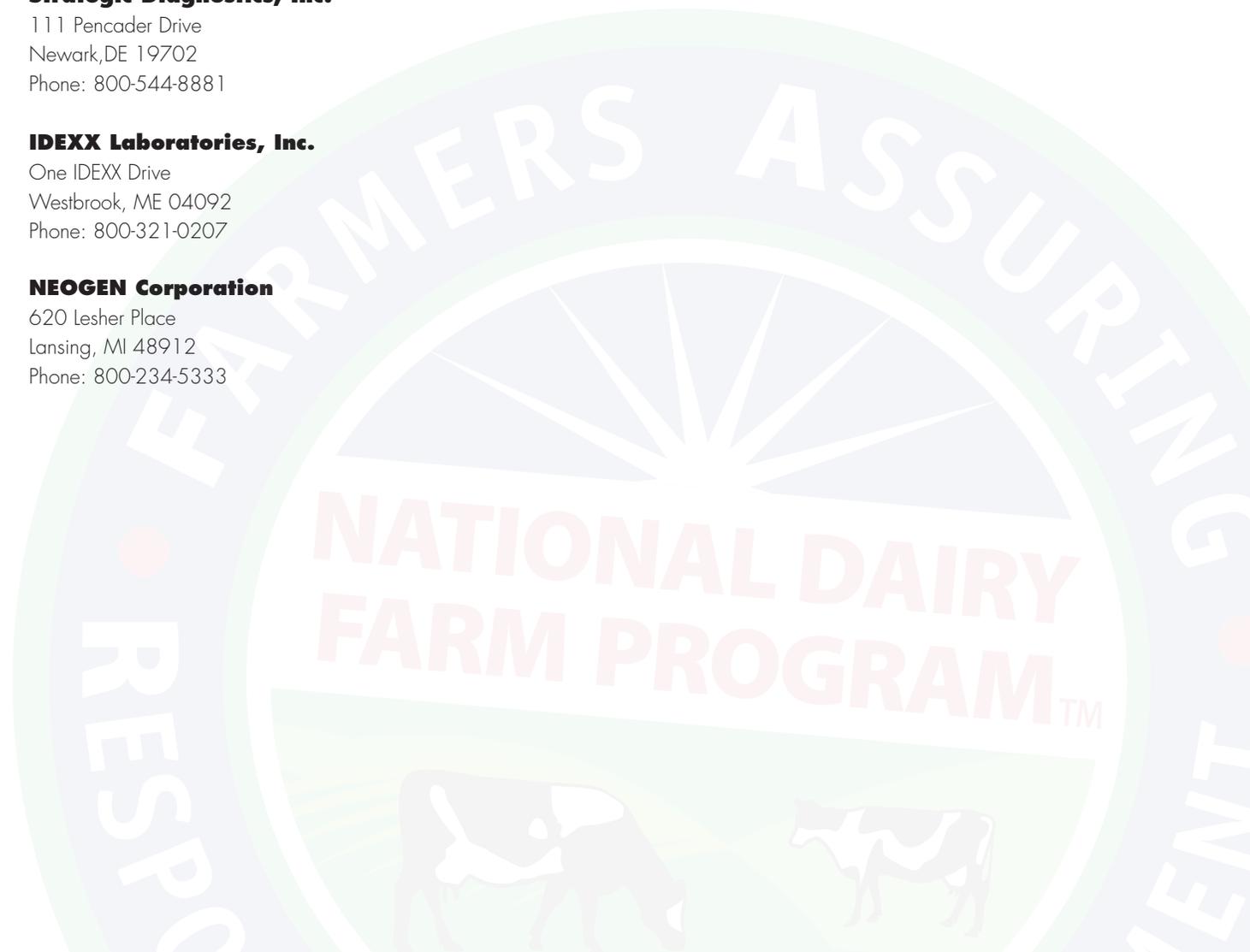
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RESPONSIBLE FARMERS ASSURING FARMERS
NATIONAL DAIRY FARM PROGRAM™

RECORD-KEEPING FORMS

- VCPR Form
- 8 Step Plan for Keeping Records
- Recommended or Approved Drug List
- Sample Animal Treatment Plan
- Beginning Drug Inventory
- Record of Drug Purchases
- Daily Treatment Record
- Drug Disposal Record



Veterinary Client/Patient Relationship Validation Form

I. Producer

Producer Name: _____

Address: _____ City: _____ Zip: _____

Farm Name and Location: _____

Section: _____ Township: _____ County: _____

Certified Status:

Verified: _____ Review Date: _____

Expiration Date: _____

Type of Operation Certified: (circle all that apply)

- | | |
|----------------------------------|---|
| 1. Cow-Calf | 2. Dairy Production (cull cows) |
| 3. Beef and/or Dairy Beef Grower | 4. Beef and/or Dairy Beef Grower-Finisher |

II. Veterinarian

Name: _____, DVM

Address: _____ City: _____ Zip: _____

Farm Name and Location: _____

SD License No. _____ USDA Accreditation No. _____

I hereby certify that a valid Veterinarian/Client/Patient/Relationship (VCPR) is established for the above listed owner and will remain in force until canceled by either party or the verification expiration date is reached.

Veterinarian's Signature: _____

Date: _____

8-STEP PLAN for Keeping Records

(Please duplicate record pages for additional records as needed.)

Why keep drug records?

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

STEP 1

Recommended or Approved Drug List (Page 50)

Early in your discussion with your herd health veterinarian you need to make a narrow list of drugs to be used on your dairy. The intent is to reduce the scope of antibiotics used. A short list will permit you to focus your knowledge and will help prevent an accidental violation of antibiotic residue laws.

STEP 2

Animal Treatment Plan (Page 51)

When practicing preventive medicine or treating early symptoms of a disease or infection, it is important to be consistent. The second step is for you to establish a treatment plan for your herd health practices. Review with your herd health veterinarian.

STEP 3

Beginning Inventory (Page 52)

You and your herd health veterinarian should discard all old drugs and all drugs not on your approved drug list (Step 1) then inventory annually the remaining drugs and other appropriate information.

STEP 4

Record Medicated Feed Purchases

Accidental antibiotic residues can occur from feeding practices as well as injections or other medical treatments. Be sure to clean feed equipment between batches. Carefully avoid disposing of leftover feed from feeder calves, hogs, etc., to lactating dairy cattle.

STEP 5

Record of Drug Purchases (Page 53)

Most successful dairy producers will record every purchase of drugs the day they are purchased. The FDA requires a paper trail of all drugs used on your dairy, so it is important to record the purchase of drugs promptly.

STEP 6

Daily Treatment Record (Page 54)

Milking and the sale of market cows will bring your Daily Treatment Record into use. Dairy producers that have accidentally marketed milk or dairy beef with violative residues state that it is important to keep these records. Properly identify treated cows. Develop good habits to properly manage antibiotics.

STEP 7

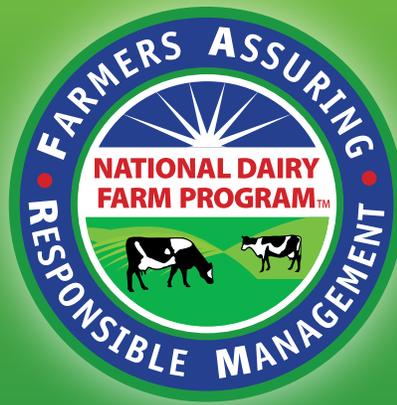
Monthly Economic Comparison (Page 54)

When do you "cull" a market cow from your herd? Every month you should review the investment you are making in each cow in the milking string. Compare your expenses by using the Daily Treatment Records.

STEP 8

Drug Disposal (Page 55)

Periodic review of drugs in storage will mean you occasionally throw away drugs which have expired. By recording your daily animal treatments and any discarded drugs, you create a paper trail of what has happened to all drugs purchased. This eight-step antibiotic management system may prevent you from incurring a costly and embarrassing antibiotic accident!



The National Dairy FARM Program: Farmers Assuring Responsible Management™



The National Dairy FARM Program™

is a nationwide, verifiable animal well-being program designed to demonstrate that U.S. milk producers are committed to the highest quality standards.



Education

Participating producers will be provided training materials that include a comprehensive animal care resource manual, a quick-reference user guide, animal care instructional videos and other educational materials. An on-farm instructor may be available from your cooperative or other source.

On-Farm Evaluation

Once a producer completes the education component, an on-farm evaluation will be completed by a trained veterinarian, extension educator, co-op field staff member, university personnel, or otherwise qualified personnel who have completed National Dairy FARM Program training. The producer then receives a status report and, if necessary, an action plan for improvement.

Third-Party Verification

To protect the integrity and credibility of the program, and enhance consumer trust, the National Dairy FARM Program includes objective third-party verification – a quantifiable validation that producers are meeting their ethical obligation for on-farm animal care.

www.nationaldairyfarm.com





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