YOUTH IN AGRICULTURE RESOURCE BUNDLE

DEPARTMENT OF AGRICULTURE

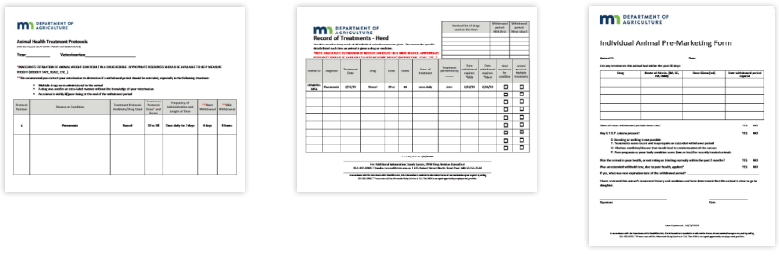
Antibiotic Stewardship

Factsheets

1. Follow the 5 R's for Residue Prevention
2. Treatment Checklist (Dairy)
3. Treatment Checklist (Meat)
4. Extra Label Drug Use
5. Testing Milk on the Farm
6. Penalties for Drug Residues in Milk
7. Avoiding Drug Residues in Meat

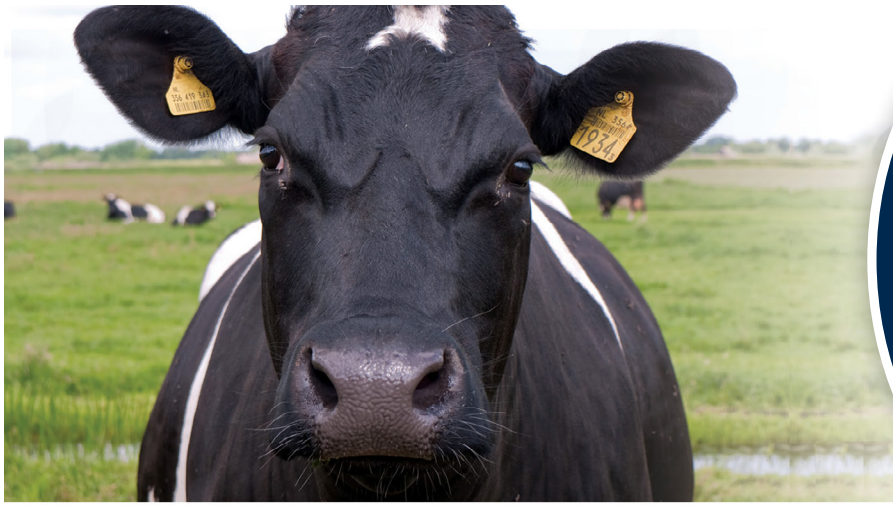
Recordkeeping

1. Animal Health Treatment Protocols
2. Daily Treatment Record
3. Premarketing Form



Flyers

1. VCPR Flyer and Fair Animals Flyer
2. Record Book Request Flyer
3. STOP Flyer



DID YOU KNOW?

There are several ways to identify treated dairy animals such as:

- Using paint to mark an animal that has been treated where it can be easily seen by milking staff (hind leg, udder or tail)
- Using two methods to mark an animal that has been treated such as leg bands AND paint
- Moving treated animals to a separate pen

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Follow the 5R's to Prevent Veterinary Drug Residue in Dairy Animals

R1 RELATIONSHIPS

Develop good relationships with people involved in the process

- Establish a good Veterinarian-Client-Patient Relationship (VCPR)
- Review veterinary recommendations with employees/family members who work on the farm
- Provide employees/family members with regular training on the prevention of milk residues as well as farm protocols for handling animals that have been treated

R2 RESPONSIBLE USE: Use and handle veterinary drugs responsibly

- Minimize use of veterinary drugs to times when they are medically necessary (less use = fewer chances for a residue)
- Store veterinary drugs for lactating and non-lactating animals separately to prevent mix-ups
- Store medicated feeds in a way that would prevent accidental use
- Properly label and store over the counter, prescription, and extra-label drugs, including information with appropriate milk and meat withdrawal times
- Develop animal treatment protocols with the help of the farm veterinarian

R3 RECORDKEEPING

Maintain good records to document treatments

- Use a good system to identify individual animals
- Maintain a recordkeeping system to document all treatments given
- Identify the animal before it is treated
- Record the treatment before it is administered
- Keep treatment records for at least THREE years
- Establish a system for identifying and separating treated animals

R4 RESPECT

Withdrawal times and usage limitations

- Use only veterinary drugs that are approved by the FDA for use in the species and animal class you are treating
- Use the drug only as the FDA label specifies UNLESS your veterinarian prescribes the drug for extra-label usage
- Follow withdrawal periods set by the drug manufacturers and your veterinarian (if using extra-label)

R5 REMOVE DOUBT

- Test milk from treated, fresh and newly purchased cows for drug residues BEFORE commingling into the bulk tank
- Test bulk tank prior to milk leaving the farm, every day, every time
- Review treatment records prior to selling an animal or her milk

For additional information visit **www.mda.state.mn.us/residue-prevention**

7/2020

DID YOU KNOW?

- By using a consistent approach to treating animals, you can help prevent drug residues on your farm.
- Animal identification and marking are key parts of preventing residues.

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TREATMENT CHECKLIST FOR DAIRY CATTLE

Drug residue prevention begins before you even treat an animal. Preparation and consistency are keys to ensuring you can effectively treat an animal and protect against residues in milk and meat. Use the checklist below to ensure you are using best practices for residue prevention.

Before you treat any animals

- ☐ Establish the identity of the animal as soon as the animal is born or within a few days of birth.
- ☐ Use ear tags or tattoos, number tagging, branding, ear notching, or RFID tags
- ☐ Develop written treatment protocols with your veterinarian using products that are approved by the FDA for use in lactating dairy cattle. These don't need to be complicated.
  - Use the **Minnesota Department of Agriculture (MDA) Animal Health Treatment Protocols Form** if you don't have your own.
  - Keep your protocols current! Review them every 6 months or whenever you make a change.
- ☐ Determine how you will separate treated animals from non-treated animals.

When you are ready to treat an individual animal

- ☐ Decide what drug you will use to treat the animal, how it will be administered, and the duration of treatment. FOLLOW your protocols!
- ☐ Gather your supplies:
  - Treatment equipment
  - Marking tools, such as brightly colored paint, leg bands, or ear tags
- ☐ Move the animal to a treatment area, if possible, for treatment.
- ☐ Document the treatment using a complete record-keeping form.
- ☐ Capture all necessary information. Refer to the MDA Daily Treatment Record Form or MDA Treatment Record Book, if you don't have your own system.
- ☐ Mark your animal BEFORE you administer the treatment.

Treating your animals

- ☐ Use appropriate injection sites as stated on the drug label, in order to minimize injection site lesions and tissue damage.
- ☐ Follow instructions as stated on the drug label, including injection site limitations.
- ☐ Calculate your withdrawal time for both milk and slaughter. If a veterinarian gives permission to use the drug in a way that is not stated on the label (referred to as extra-label drug use or ELDU), follow the veterinarian's labeled instructions and document the new ELDU withdrawal times.
- ☐ Segregate and/or ensure adequate identification of treated animals either individually or as a group.

After treatment

- ☐ Retain treatment record for at least two years.
- ☐ Use a premarketing review process such as the MDA Pre-marketing Checklist or MDA Marketing Log before marketing an animal for meat.

For further information go to **www.mda.state.mn.us/residue-preventionmn.us/residue-prevention**

DID YOU KNOW?

- Most drug residues can be prevented by using good systems for treating animals and documenting treatments.
- Animal identification and marking are key parts of preventing residues.

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ANIMAL TREATMENT PROTOCOL CHECKLIST FOR MEAT ANIMALS

Drug residue prevention begins before you even treat an animal. Preparation and consistency are keys to ensuring you can effectively treat an animal and protect against residues in meat. Use the checklist below to ensure you are using best practices for residue prevention.

Before you treat any animals:

☐ Establish the identity of the animal as soon as the animal is born or within a few days of birth.

- Use ear tags or tattoos, number tagging, branding, ear notching, or RFID tags.

☐ Develop written treatment protocols with your veterinarian using products that are approved by the FDA for use in meat animals.

- Use the **Minnesota Department of Agriculture (MDA) Animal Health Treatment Protocols Form** if you don't have your own.
- Keep your protocols current! Review every 6 months or whenever you make a change.

☐ Determine how you will segregate any treated animals.

When you are ready to treat an individual animal:

☐ Decide what drug you will use to treat the animal, how it will be administered, and the duration of treatment. FOLLOW your protocols!

☐ Gather your supplies:

- Treatment equipment
- Marking tools, such as brightly colored paint or ear tags

☐ Move the animal to a treatment area, if possible, for treatment.

☐ Document the treatment using a complete record-keeping form.

☐ Capture all necessary information. Refer to the **MDA Daily Treatment Record Form** or **MDA Treatment Record Book**, if you don't have your own system.

☐ Mark your animal BEFORE you administer the treatment.

Treating your animals:

☐ Use appropriate injection sites, such as neck muscles or the base of ear, in order to minimize injection site lesions and tissue damage.

☐ Follow instructions as stated on the drug label, including injection site limitations.

☐ Calculate your withdrawal time for slaughter. If a veterinarian gives permission to use the drug in a way that is not stated on the label – extra-label drug use (ELDU) – ensure you follow your veterinarian's labeled instructions and document the new ELDU withdrawal time.

☐ Segregate and/or ensure adequate identification of treated animals either individually or as a group.

After treatment:

☐ Retain treatment record for at least two years.

☐ Use a premarketing review process such as the **MDA Pre-marketing Checklist** or **MDA Marketing Log** before marketing an animal for meat.

For further information go to www.mda.state.mn.us/residue-prevention

3/2024

ABOUT THE LABEL

Every drug approved by the FDA must have a label which contains, at a minimum:

- The specific disease or condition to be treated
- The approved species (i.e. cattle, swine, sheep, etc) and class of animal (i.e. lactating, nonlactating, beef)
- Approved dose, route of administration, duration of treatment and frequency of administration
- Slaughter or milk withdrawal time

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Extra-label Drug Use (ELDU)

Extra-label drug use is defined as giving a drug in a different way than is described on the FDA-approved label. This is also sometimes called “off-label”.

Why is it important to use a drug as directed on the FDA-approved label?

Approved withdrawal times are based on the label directions, any other use may result in a longer withdrawal time, and a residue violation if the withdrawal time is not properly extended.

When is ELDU allowed?

ELDU is allowed for certain drugs, only with veterinary oversight. With a valid VCPR (veterinary-client-patient relationship), a licensed veterinarian can prescribe the use of a drug that differs from the labeled use.

What drugs are prohibited from ELDU?

For food-producing animals, the extra-label use of certain drugs is prohibited. This includes the fluoroquinolone and cephalosporin antibiotics, which are very important in human medicine.

Drug	ELDU Allowed
Baytril (Enrofloxacin)	PROHIBITED
Advocin (Danofloxacin)	PROHIBITED
Excenel RTU (Ceftiofur HCL)	For a different disease indication only
Excede (Ceftiofur Crystalline Free)	For a different disease indication only
Naxcel/Ceftiflex (Ceftiofur Sodium)	For a different disease indication only

How is ELDU different than a prescription?

A prescription is an instruction written by a veterinarian that authorizes a client (producer) to buy a medicine or treatment or the client to use the drug in a certain way. Most drugs are considered prescription drugs and require a prescription to be dispensed. ELDU is an additional set of instructions given by the veterinarian that differs from the manufacturer’s label. These instructions should be included by the veterinarian on a separate label also applied to the medication packaging.

For additional information visit **www.mda.state.mn.us/residue-prevention**

DID YOU KNOW?

- Antibiotics in milk can kill the bacterial cultures that are added during the manufacturing of some dairy products, such as yogurt and cheese.
- Consumers who are allergic to antibiotics can become very sick if exposed to even small doses of antibiotics.
- Low-level intake of antibiotics from food could result in resistant microorganisms.

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Testing Milk on the Farm

On farm testing of the bulk tank is one of the best ways to ensure milk with drug residues does not leave your farm. Because each test has slight variations in testing capabilities, understanding how tests differ and which test(s) your creamery is using will help you make the most of your testing program.

What should you know about on-farm testing?

- Tests are easy to set up and run.
- Test kits vary in their cost, length of time to run *(See Table 1)* and which drugs and drug levels they detect. *(See Table 2)*
- Test kits may be provided at a discount through your processor. Contact your dairy field service representative to find out what tests are available to you and at what price. If they are not available through your processor, you can contact the manufacturer directly. *(See Table 1)*

Which test should you use?

Whenever possible, on-farm bulk tank testing should be performed with the same test as your processor uses to test milk upon arrival at their facility. Using the same test as your processor will increase your ability to detect the same drug residues at the same levels. Using a test that differs from your processor may lead to an on-farm result that conflicts with your processor's result.

Should you test individual animals?

Producers should always test treated animals and fresh cows individually before commingling their milk into the bulk tank. Testing should start after the milk withholding time has been met and continue until the animal's results are negative/not found. Some tests, such as a Delvotest®, are more appropriate for testing individual animals, and are designed to detect a wide variety of antibiotics used on the farm, and at a low sensitivity level for most drugs.

Table 1. Widely available on-farm screening test kits.

Test	Test run time	Cost to you**	How to order
Charm® BL30SEC	30 seconds	$71.00/20 tests $326.00/100 tests $1538 for EZ Lite reader/incubator combo (one-time cost)	Contact 1-800-343-2170 to be put in touch with your local representative
Charm® SL	8 minutes	$69.00/20 tests $318.00/100 tests $373.00 for incubator (one-time cost)	Contact 1-800-343-2170 to be put in touch with your local representative
Charm® SL3	3 minutes	$71.00/20 tests $326.00/100 tests $373.00 for incubator (one-time cost)	Contact 1-800-343-2170 to be put in touch with your local representative
Delvotest® P Mini	2-3 hours	$40.12/25 tests $153.44 for the Delvotest® block heater (one-time cost)	Call DSM (Distributor Nelson Jameson): 1-800-826-8302
IDEXX New SNAP® Beta Lactam Test	5 minutes to heat 4 minutes to read	$101.97/30 tests $309 for heater block (one-time cost) $445 Dairy Starter Kit (timer, heater, 40 tests- 20 beta lactam, 20 tetracycline)	Call 1-800-321-0207 and ask to be put in touch with your local representative

****These are list prices and they are subject to change. Make sure to contact the appropriate party to ask about current prices and discounts.**

While the MDA does not endorse specific products, the tests included in table 1 are commonly used on farms and approved for use by the FDA for testing of beta lactam drugs.

Table 2. Milk Drug Residue Screening Test Detection Levels for the Beta Lactam Group

DRUG	AMOXICILLIN	AMPICILLIN	CEFTIOFUR	CEPHAPIRIN	CLOXACILLIN	PENICILLIN
TOLERANCE OR SAFE LEVEL	10 ppb	10 ppb	100 ppb	20 ppb	10 ppb	5 ppb
SCREENING TEST						
Charm® BL30SEC Beta Lactam Test	5.8	5.9	73	13	8.1	2.9
Charm® SL Beta Lactam Test	5.6	8.5	77	13.7	50	3.6
Charm® 3 SL3 Beta Lactam Test	8.4	8.0	79	20.0	8.6	3.8
*Delvotest® P 5 Pack	4.6	4.0	ND[1]	8.2	NA	2.1
*Delvotest® P Mini	7.7	5.1	NA[2]	7.0	30	3.1
New SNAP® Beta Lactam Test	7.3	5.8	12	11.7	50	3.0

*Delvotests® are not specific for Beta-lactams only. A non-Beta lactam drug residue, such as a sulfa or a tetracycline, can cause a positive test.

[1] ND indicates not detected at or below the tolerance level. Ceftiofur and its metabolites may be detected at levels above the tolerance level.

[2] NA indicates that test detection levels are not available from the manufacturer.

Table 2 is based on information found in FDA m-a-85, Revision #16. This document details the list of all approved tests and their limits of detection. New tests are approved frequently and changes to requirements can occur.

For additional information visit **www.mda.state.mn.us/residue-prevention**

DID YOU KNOW?

Milk is routinely tested for drug residues using two testing programs:

- Routine Tanker Testing: Every load of milk is tested for antibiotics prior to being unloaded at the dairy plant.
- Monthly Quality Testing: Samples taken from individual producers are tested approximately once a month for the presence of drug residues and other milk quality parameters.

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Penalties for Drug Residues in Milk

Milk that contains veterinary drug residues is considered adulterated or unfit for human consumption. Selling adulterated milk is against the law, and specific actions are taken to ensure that adulterated milk is not used to make dairy products for human consumption. Individual producers are penalized for selling adulterated milk, even if the residue was accidental.

What happens when a drug residue is detected?

If a routine tanker test is positive, commonly called a "hot load", a traceback process begins. Samples from that load are tested to determine which producer caused the residue. The producer found to be at fault is responsible for the value of all milk on the load that tests positive and any costs associated with the disposal.

Samples from all individual producers are also tested at least once a month. These results are considered official regulatory samples and become a part of the producer's official record. Other milk quality criterion such as somatic cell count, bacteria count, and proper temperature verification are measured from these samples. If a drug residue is detected in this monthly quality sample, the Minnesota Department of Agriculture (MDA) is required to make an on-site review. Because the tanker load in this example was not found to be positive, the milk will not be disposed of and no cost will be incurred by the producer.

What are the penalties for a drug residue violation?

The penalties vary slightly depending upon how many residue violations a producer has had within the past month 12 period. These penalties (Minnesota Statutes 32D.19) include the following for first or second violations:

- Immediate suspension of the producer's permit or certification; the producer cannot sell milk again until it is resampled and has tested negative/not found.
- The producer must meet with the dairy inspector and outreach veterinarian (OVET) within 30 days of the violation to review the potential cause.
- The producer must complete a Milk and Dairy Beef Residue Prevention education module either online or in-person with a veterinarian.

For any subsequent violations within the 12-month period, the MDA may issue a longer permit suspension (up to 30 days) or an administrative penalty to the producer.

What can you expect during your meeting with the inspector and the OVET?

The inspector, and in most cases, a veterinarian with special training in veterinary residue prevention, will attend the meeting. During the meeting, they will:

- Ask questions about how you think the residue occurred
- Review your drug treatment records
- Look at the drugs you have for proper labeling and withdrawal times
- Review the penalties for the current residue violation and what penalties you may incur for any future residue violations
- Provide you additional information about how you can prevent future residues
- Answer any questions you have regarding the residue detection process or how to prevent residues in the future.

Can you appeal a drug residue violation?

Yes. A dairy producer may appeal a violation by sending a written request for an appeal to the Commissioner of Agriculture within 10 days of the violation. The request should contain your reasons and evidence supporting your belief that the finding was in error or should not be considered a violation. If you are not sure if you want to appeal or simply desire more information about your violation, please contact your field service representative or dairy inspector.

For additional information visit **www.mda.state.mn.us/residue-prevention**

DID YOU KNOW?

- All condemned animals are tested for residues
- In 2018, 87.1% of Drug Residues in MN were from the Dairy Industry
- In 2018, the majority of these residues were from Penicillin and Cephalosporin drugs such as Excede, Excenel, Naxcel and Ceftiflex

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Avoiding Drug Residues in Meat

Because drug residues in meat have important food safety considerations, it is against the law for anyone to sell any meat containing unsafe levels of drugs. The Food and Drug Administration (FDA) sets tolerance levels for some drugs based on safety data; some drugs used in food animals have no tolerance levels, and as a result, any meat containing those residues must be discarded.

How does meat residue testing work?

The USDA FSIS (Food Safety and Inspection Service) oversees antibiotic testing of meat tissue, which is broad and can detect most common drugs used on farms. Inspectors in slaughter plants collect samples from random animals. These samples are screened at the plant on the KIS test (Kidney Inhibition Swab). If a KIS test is positive, samples from the carcass will be sent to a USDA lab for further testing for many drugs, such as antibiotics, anti-parasitics, anti-inflammatories, and tranquilizers. If a residue is identified above the safe tolerance level, the owner of the carcass will be notified of a tissue (meat) residue violation.

What are the penalties for a drug residue in meat?

Producers that sell an animal with a detected meat residue will receive a warning letter from the FDA, as well as an on-farm visit to review records and collect information on the cause of a residue. The names of violators with two or more violations in a 12-month period are posted on a USDA repeat violators list, that is used as a reference for meat processors and livestock markets as they determine whether or not future animals from that producer are at higher risk of a residue. The FDA may also prohibit producers found to have been neglectful, or who fail to adequately prevent residues, from selling animals for meat.

Are there other consequences for a drug residue in meat?

In order to satisfy the requirements of their food safety plan, meat processing facilities may avoid purchasing animals from farmers with multiple published violations. Some processors may also place a violator on probation for a time after the FIRST violation. During this time, they might require the violator to attest that each animal shipped to the facility is free of medications and include supporting documentation from the violator and/or their veterinarian.

How can you decrease your chances of having a drug residue in your animals?

Livestock producers can implement several best practices to avoid residues:

- Keep accurate treatment records
- Consult with your veterinarian about appropriate use of veterinary drugs and accurate withdrawal time
- Adhere to injection site limitations for each individual drug
- Avoid selling animals for food that are very sick, lame or severely dehydrated; opt for humane euthanasia instead

Contribute to food safety by practicing on-farm drug residue prevention. If you would think twice before consuming the meat from your farm, then consider that no one should be eating that product.

For additional information visit **www.mda.state.mn.us/residue-prevention**

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Animal Health Treatment Protocols

(TO BE FILLED OUT WITH YOUR VETERINARIAN)

Year_____ Veterinarian_____

*INACCURATE ESTIMATION OF ANIMAL WEIGHT CAN RESULT IN A DRUG RESIDUE. APPROPRIATE RESOURCES SHOULD BE AVAILABLE TO HELP MEASURE WEIGHT (WEIGHT TAPE, SCALE, ETC…)

**We recommend you contact your veterinarian to determine if a withdrawal period should be extended, especially in the following situations:

- Multiple drugs were administered to the animal
- A drug was used in an extra-label manner without the knowledge of your veterinarian
- An animal is visibly ill/poor-doing at the end of the withdrawal period

Protocol Number	Disease or Condition	Treatment Protocol: Antibiotic/Drug Used	Treatment Protocol: Dose* and Route	Frequency of Administration and Length of Time	**Meat Withdrawal	**Milk Withdrawal
1	Pneumonia	Naxcel	20 cc IM	Once daily for 3 days	4 days	0 hours

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Record of Treatments - Herd

Use this record to keep track of all individual animal treatments given. Document the specific details listed each time an animal is given a drug or medicine.

***NOTE: INACCURATE ESTIMATION OF WEIGHT CAN RESULT IN A DRUG RESIDUE. APPROPRIATE RESOURCES SHOULD BE AVAILABLE TO HELP MEASURE WEIGHT (WEIGHT TAPE, SCALE, ETC…)**

Itemized list of drugs used on this farm	Withdrawal period: Milk (hrs)	Withdrawal period: Meat (days)

Animal ID	Diagnosis	Treatment Date	Drug	Dose	Route	Freq. of treatment	Treatment performed by _____	Date withdrawal expires: *Milk	Date withdrawal expires: *Meat	Final Treatment for condition	Animal Received Multiple Treatments
EXAMPLE: 3456	Pneumonia	2/12/19	Naxcel	20 cc	IM	once daily	John	2/12/19	2/16/19	☐	☐
										☐	☐
										☐	☐
										☐	☐
										☐	☐
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										☐	☐
										☐	☐
										☐	☐

Last Updated: 7/2/2020

For Additional Information: Sandy Larson, DVM Drug Residue Consultant
952-207-0984 | Sandra.Larson@state.mn.us | 625 Robert Street North, Saint Paul, MN 55155-2538

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Individual Animal Pre-Marketing Form

Animal ID: _____ Date: _____

List any treatments this animal had within the past 90 days:

Drug	Route of Admin. (IM, SC, IM, IMM)	Dose Given (mL)	Date withdrawal period expired

Have all meat withdrawal periods been met? YES NO

Any S.T.O.P. criteria present? YES NO

Veterinary Client Patient Relationship (VCPR)

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Link to video and resources at
www.mda.state.mn.us/drug-residue-prevention-resources

YouTube

FAIR Animals Can Become *FOOD* Animals

– Take Great Care! –

Drug Stewardship

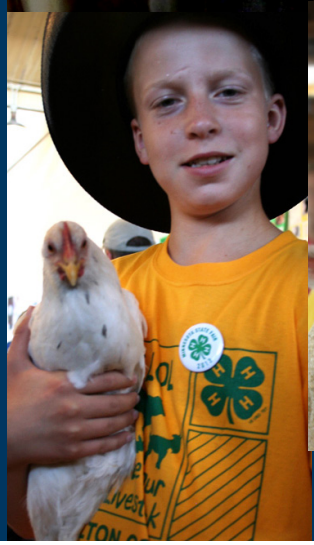
Good animal husbandry allows you to save veterinary drugs for when they are really needed.

Judicious Drug Use

Using veterinary drugs wisely can reduce the chance of drug residues in meat and other animal products.

Learn more at

www.mda.state.mn.us/drug-residue-prevention-resources



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REQUEST A **FREE** SPIRAL BOUND

RECORD BOOK

Keep track of treatments, withdrawal periods, and more!

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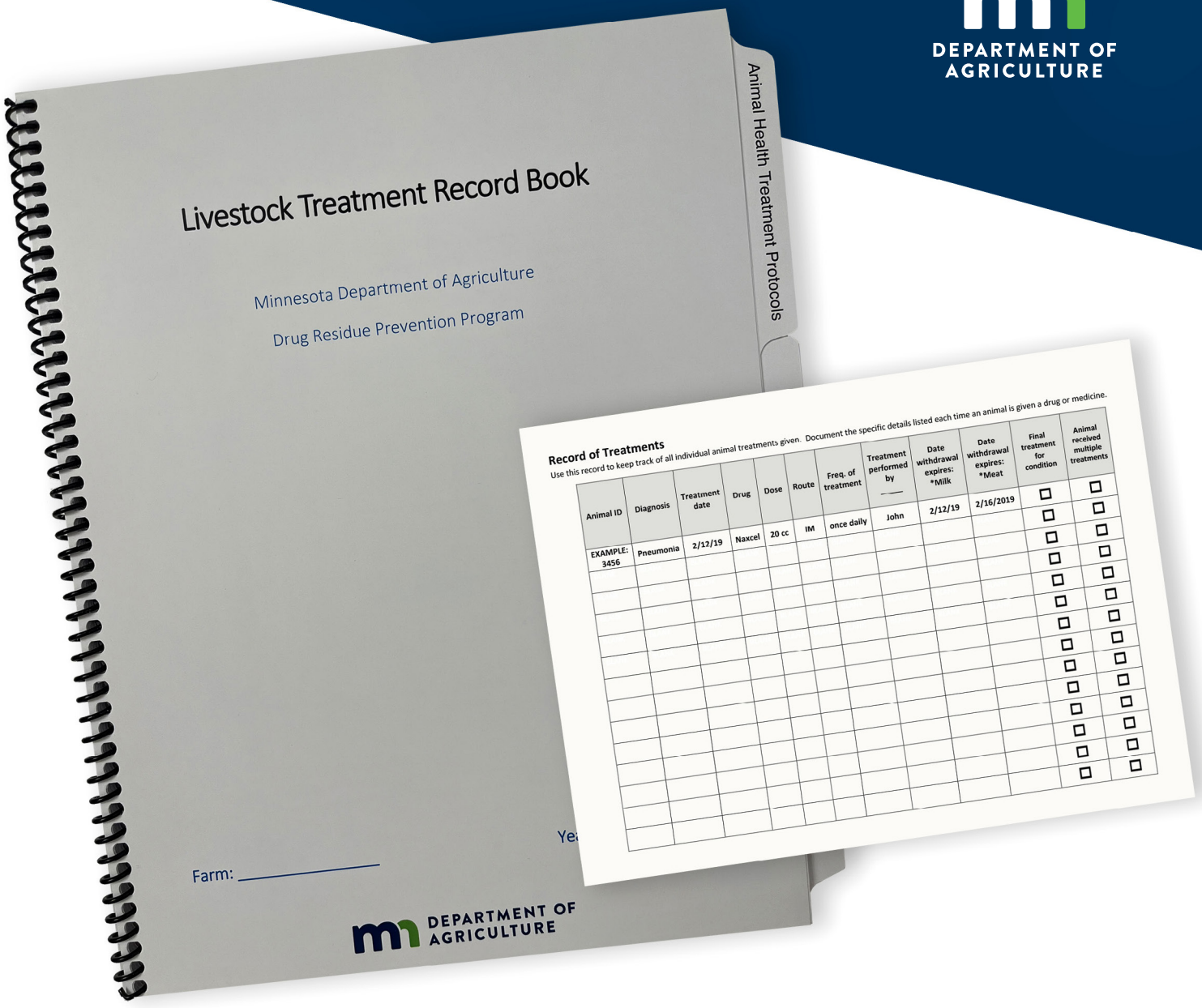

Fill out the request form at www.mda.state.mn.us/rkbklt

May 2024

Is Your Animal Ready for Slaughter?

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If your animal meets any of the following criteria, consider getting additional veterinary input to determine whether the animal is fit for slaughter.

S tanding or walking is not possible

T reatments were recent and may require an extended withdrawal period

O bvious condition/disease that would lead to condemnation of the carcass

P oor prognosis or poor body condition score (two or less) for recently treated animals

For more information and resources on how to prevent drug residues in your animals, visit our website at:
www.mda.state.mn.us/residue-prevention