

BQA: Storing Vaccines Properly

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The Arkansas Beef Quality Assurance Program (BQA) is an educational program that illustrates the importance of proper handling and administration of animal health products. One BQA recommendation is to store animal health products at the proper temperature.

Refrigeration is required for most animal health products (antibiotics, pharmaceuticals, biologicals, vaccinations, etc.). Biological products should be kept under refrigeration between 35° to 45°F (2° to 7°C) unless the inherent nature of the product makes storage at a different temperature advisable. Storing animal health products at < 35°F can be more damaging than storing animal health products at > 45°F because the antigen can separate from the adjuvant.

Producers are very good about storing animal health products in a refrigerator. These refrigerators are often older models and are located outside, in a tack room, near the working chute, in barns and/or out in the elements. Given these situations, maintaining proper temperature for animal health products becomes a genuine concern.

In order to determine if animal health products were being stored at the proper temperature, a Watch-Dog data logger was used to monitor and record the refrigerator temperature every 10 minutes for 48 hours. Results from this demonstration clearly showed temperature of refrigerators storing animal health products should be monitored very carefully. In addition, following a simple refrigerator general maintenance plan can help ensure the refrigerator is working properly.

Refrigerator Demonstration Results

WatchDog data loggers were used to record the temperature at 10-minute intervals for 48 hours in 219 refrigerators of producers (76%), retail stores (18%) and veterinarian clinics (6%). The most common refrigerator tested was a refrigerator with



Figure 1. A producer's refrigerator that contained 31 bottles of animal health products, of which 31 bottles had been opened and 28 bottles were expired. Note the ice buildup around the freezer unit and the rust on the door seal.

the freezer on top (45%), followed by side-by-side refrigerators (22%), mini-refrigerators (17%), other types of refrigerators (14%) and freezer-on-bottom refrigerators (2%). The refrigerator ages were listed as ≤ 5 years = 22%, 6 to 10 years = 38%, 11 to 15 years = 20% and > 15 years = 20%. The “other” category (53%) was the most common category for refrigerator location, followed by kitchen (22%), barn (13%), mud room (6%), tack room (5%) and porch (1%). The “other” category locations included within a store (33%), office (23%), workshop (19%) and garage (15%).

Of the 1,800 animal health products stored in producers' refrigerators, 12% were expired and 29% were opened. For most animal health products, an expiration date is printed on the label. Any expired animal health product should not be used and should be disposed of properly. Review the manufacturer's insert for proper disposal methods or unique disposal concerns regarding human health. Mixed modified live vaccines should be disposed of one hour after mixing. Killed

vaccines should be disposed of approximately 10 days after opening.

Table 1 illustrates the importance of monitoring refrigerator temperature to ensure animal health products are stored at the correct temperature. Of the 219 refrigerators tested, only 59 (27%) recorded temperatures within 35° to 45°F greater than 95% of the time over a 48-hour period. To illustrate the seriousness of the situation, 53 refrigerators (24%) recorded temperatures within 35° to 45°F less than 5% of the time over 48 hours. It is recommended that animal health products be stored in refrigerators that maintain the temperature within 35° to 45°F 95% of the time. Given this recommendation, 73% of the refrigerators tested are unacceptable for storing animal health products.

Table 1. The number and percentage of refrigerators categorized by the percentage of data points within 35° to 45°F.

Category ^a	Number of Refrigerators	Percentage of Refrigerators
Greater than 95% ^b	59	27%
66% to 95%	43	20%
36% to 65%	36	17%
5% to 35%	28	13%
Less than 5%	53	24%

^a 288 data points were recorded over a 48-hour period.

^b Of the 288 data points, greater than 95% of the data points were within 35° to 45°F.

General Refrigerator Maintenance

All refrigerators require general maintenance, and it is important to keep the refrigerator coils clean. Refrigerator coils are located in the rear of the refrigerator and can be cleaned by vacuuming the

vents and coils. Dusty coils have to work harder to cool down the interior and contents of the refrigerator.

The drip pan, located beneath the refrigerator, should also be cleaned. In automatic defrost models, the water from the defrost process flows out a drain in the floor of the refrigerator and into a pan where it sits until evaporating. Food particles can be carried along and clog the drain or be left behind to rot. You can clear out the tube that carries particles to the pan by removing the stopper at the opening. Stick a pipe cleaner or similar device into the opening to push any particles through to the pan. Flush with soapy water and then empty and clean the pan.

The gaskets are the seals that keep cold air in and the outside air out of the refrigerator, and the gaskets should last the life of the refrigerator if properly cared for. Gaskets should be washed with soapy water, and the “paper test” can be used to test the condition of the gasket. You should not be able to slide a piece of paper between the rubber seal and the wall of the refrigerator. If the piece of paper slips between the seal and the wall, the seal is not tight enough and the gasket requires replacement.

Consider the location of your refrigerator and/or freezer. Do not position them in direct contact with hot appliances, as this will make the compressor work harder. Regularly defrost manual-defrost freezers, never allowing frost to build up more than 0.25 inch.

Implications

This demonstration assisted producers in determining if they are storing animal health products according to labeled instructions. When animal health products are stored incorrectly, the effectiveness of animal health products may become compromised. All animal health products that are past their expiration date or opened should be disposed of properly.

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