

# Idaho BQA Vaccine Handling and Management Study



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FRTEP 2011 Annual Meeting

Study funded by:



# Study Background

- Vaccine product efficacy is at risk due to improper handling and storage.
- Animal health products require refrigeration at 35 - 45°F.
- U of AR and NV found many refrigerators fail to maintain proper storage temperatures.
- Federal code states biological products shall be considered worthless after expiration date.
- National Beef Quality Audit identified significant carcass defects due to improper use of animal health products.
- NAHMS study (2007-08) showed BQA trained producers have improved vaccine storage and handling practices.

# Why Worry?

- Improper handling procedures inactivate vaccine, rendering it less potent or useless!
  - UV light
  - Temperature extremes
  - Injection techniques
- Animals don't gain immunity from inactivated vaccine!
- Vaccine is expensive!

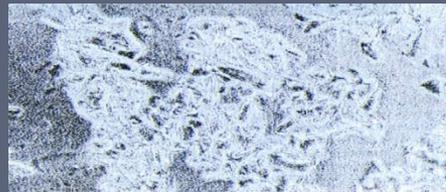


# Temperature Affects on Vaccine

- Below 35° F
- Doesn't necessarily destroy active ingredient
- Changes adjuvant structure
- May release bound toxins from adjuvant
- Product is then inactivated



Alum adjuvant before freezing.



Alum adjuvant after freezing.

- Above 45° F
- Reduces efficacy
- Inactivates vaccine



# Study Methods

- LogTag® Temperature Data-loggers
  - Placed in ranch & retailer refrigerators for 48 hours.
- Temperature readings recorded every 10 minutes.
- Ranch (129) and retailer (47) surveys were completed regarding vaccine practices.
- Photos were taken of refrigerators.



# Survey Questions

- Age and type of refrigerator
- Ranch size and type
- Number of products
  - Antibiotics, Killed Vaccine, Modified Live Vaccine
- Expiration dates
- Number of opened or used bottles
- Storage location
- Food and drinks
- Vaccine purchasing
- Handling/transportation procedures
- Vaccination practices
- Recordkeeping







Our First  
Soft  
Cotton  
Gloves  
Sterile  
Latex  
Gloves  
Non-Sterile  
Latex  
Gloves

DAXIN

MIC

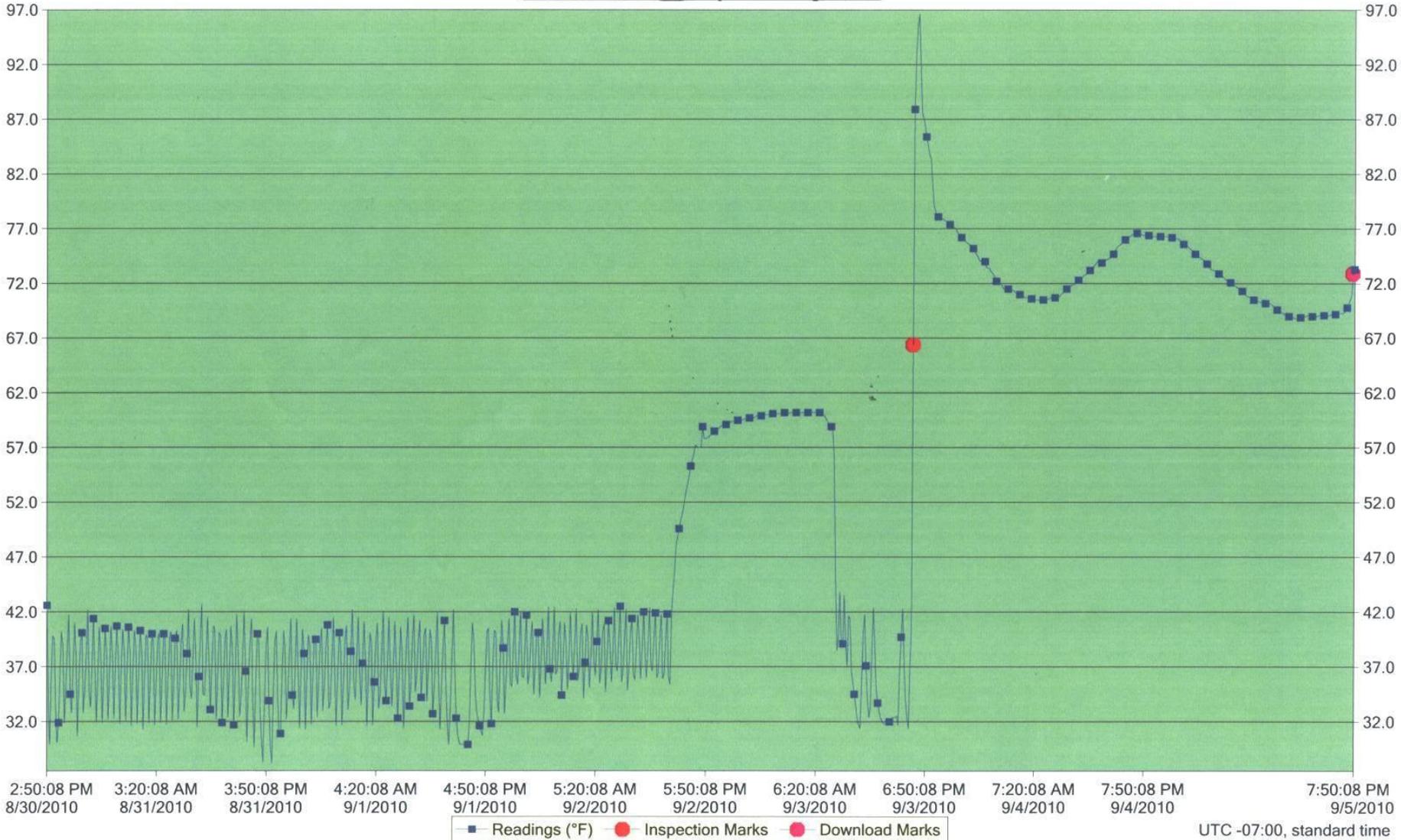
UNIXIN INJECTION  
BYETEK

1456



LogTag ID 9300015352  
User ID [REDACTED]  
First reading 8/30/2010 2:50:08 PM  
Last reading 9/5/2010 7:50:08 PM  
Name of file 9300015352 Started 8-30-2010, Finished 9-5-2010.ltd  
File location C:\Documents and Settings\dgunn\My Documents\My LogTag Data\

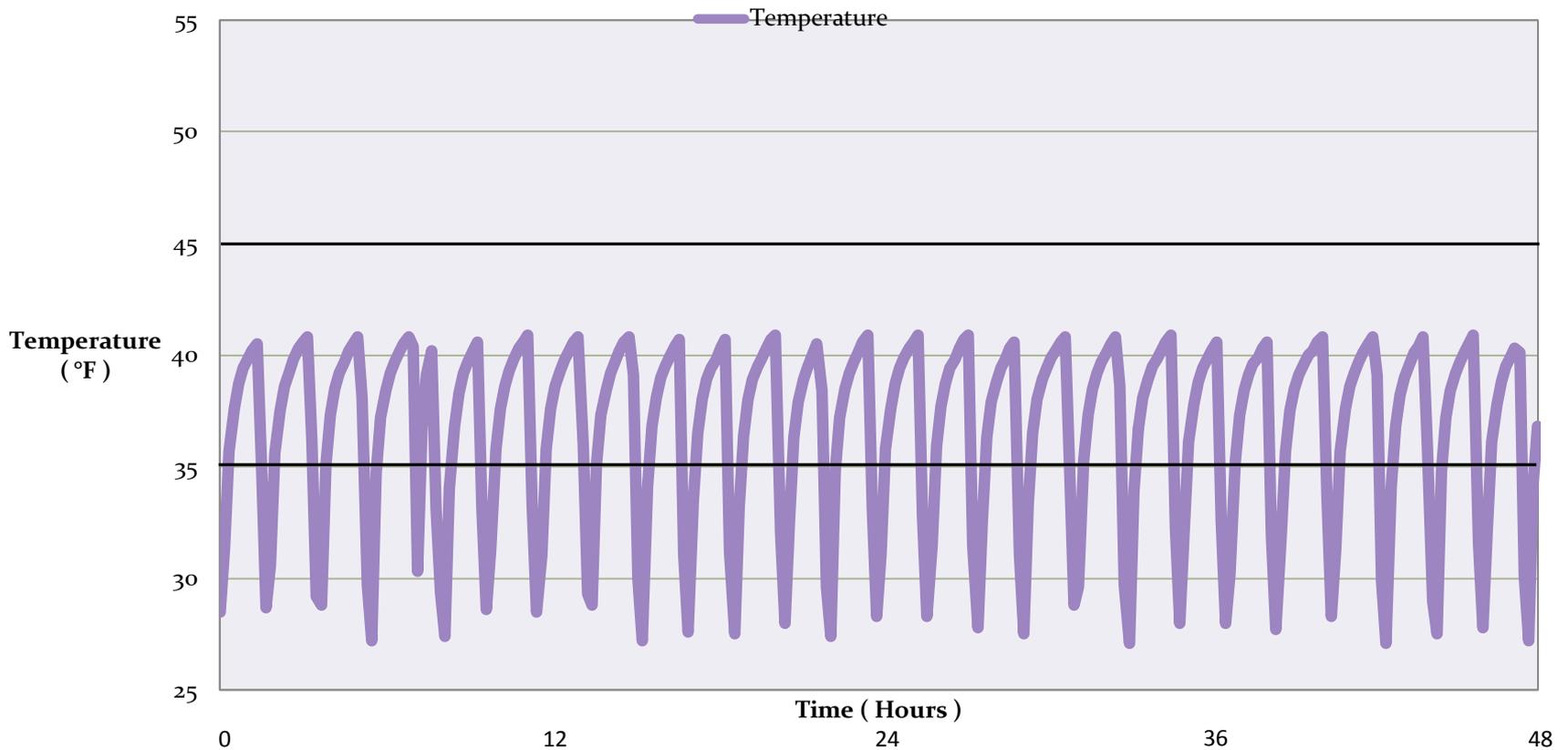
9300015352 - [REDACTED]



UTC -07:00, standard time

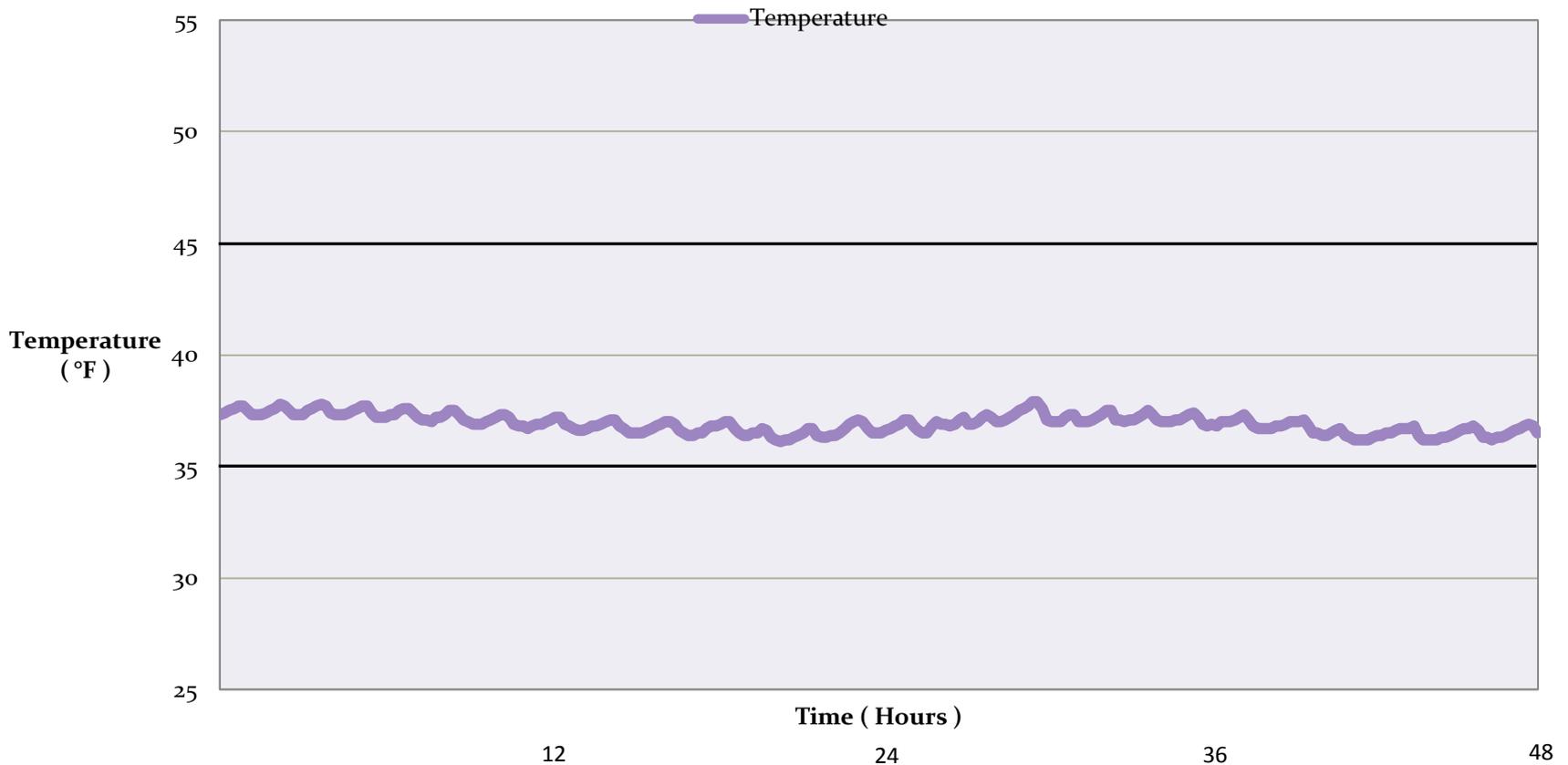
# Data Logger Example

## Temperature Over 48 hour Time Period

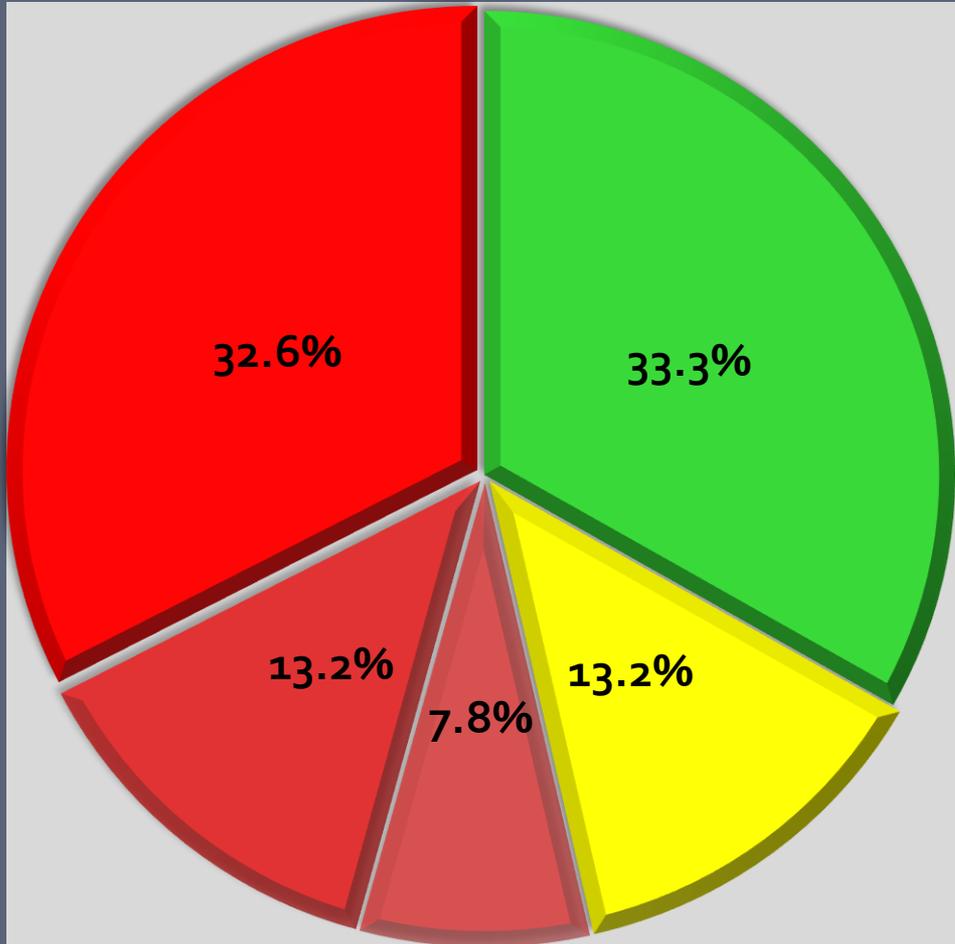


# Data Logger Example

## Temperature Over 48 hour Time Period

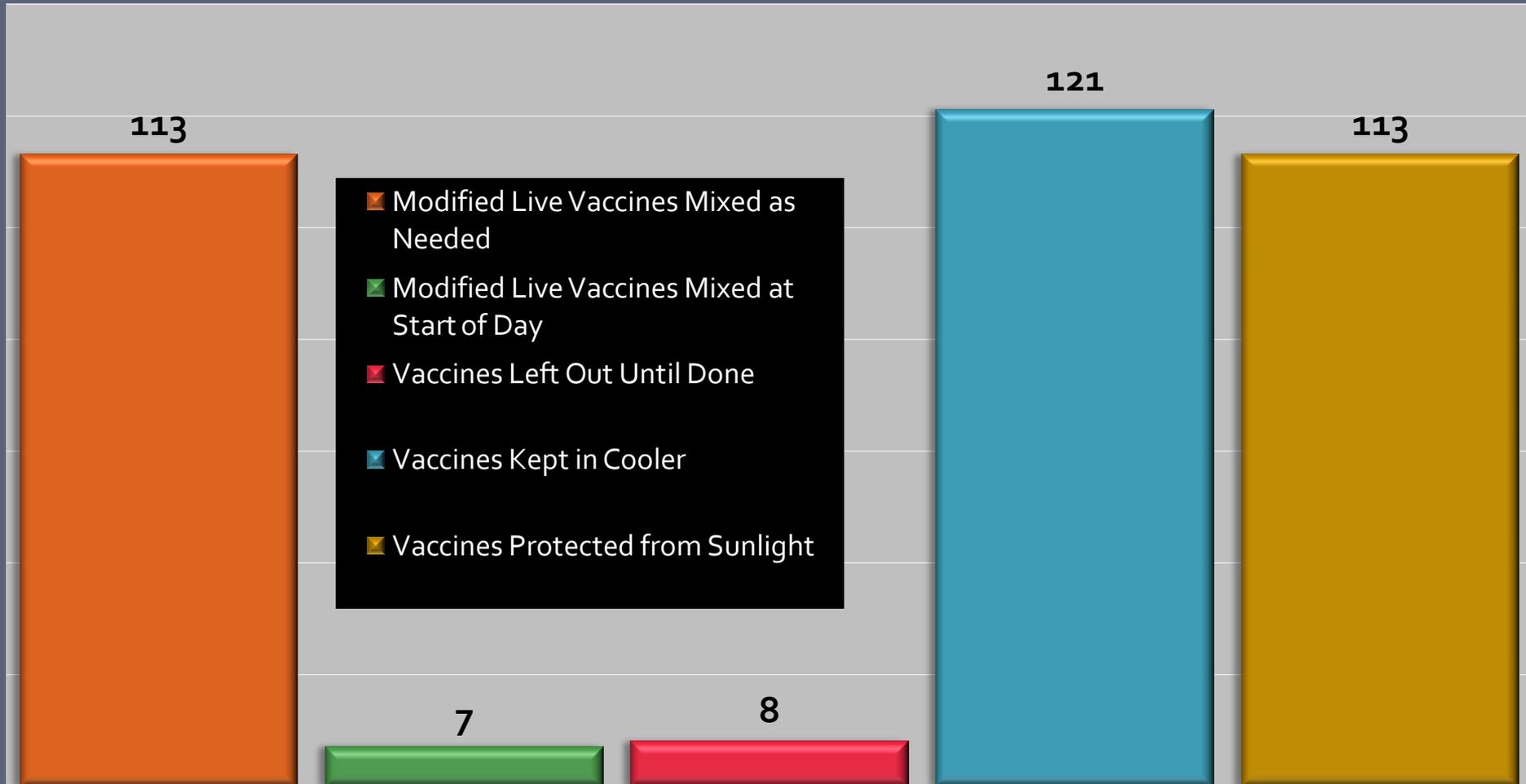


# Survey Results: Refrigerators within Recommended Temperature Range



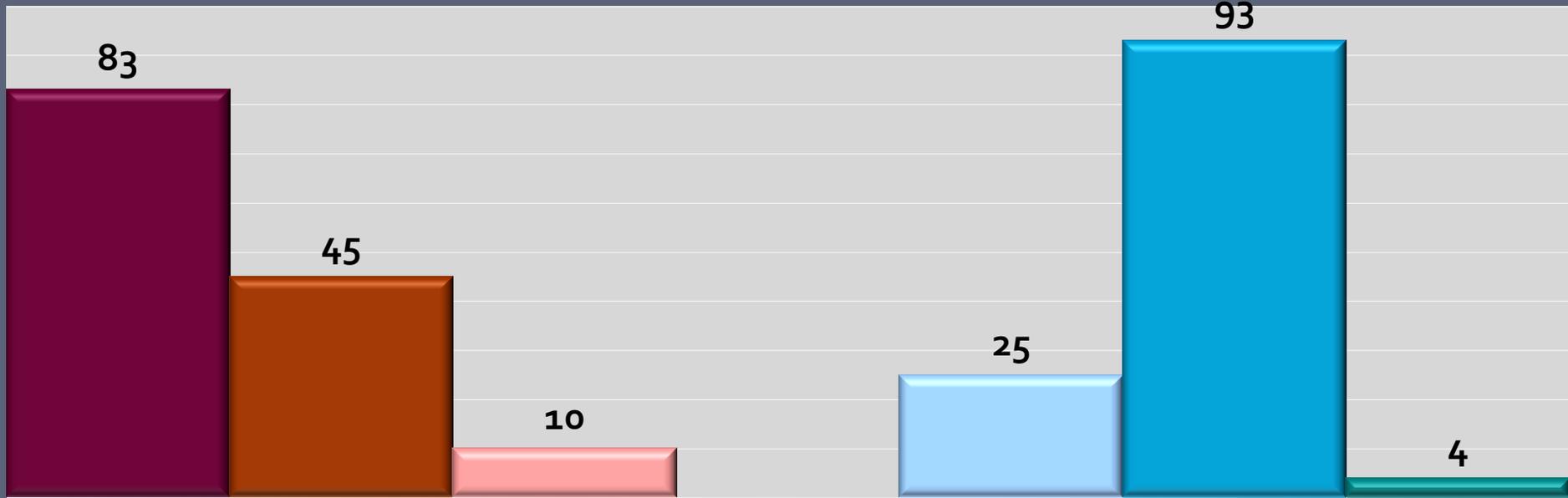
- Greater than 95% of time within recommended temperature range
- 66 to 95% of time within recommended temperature range
- 36 to 65% of time within recommended temperature range
- 5 to 35% of time within recommended temperature range
- Less than 5% of time within recommended temperature range

# Survey Results: Vaccine Chute Side Practices

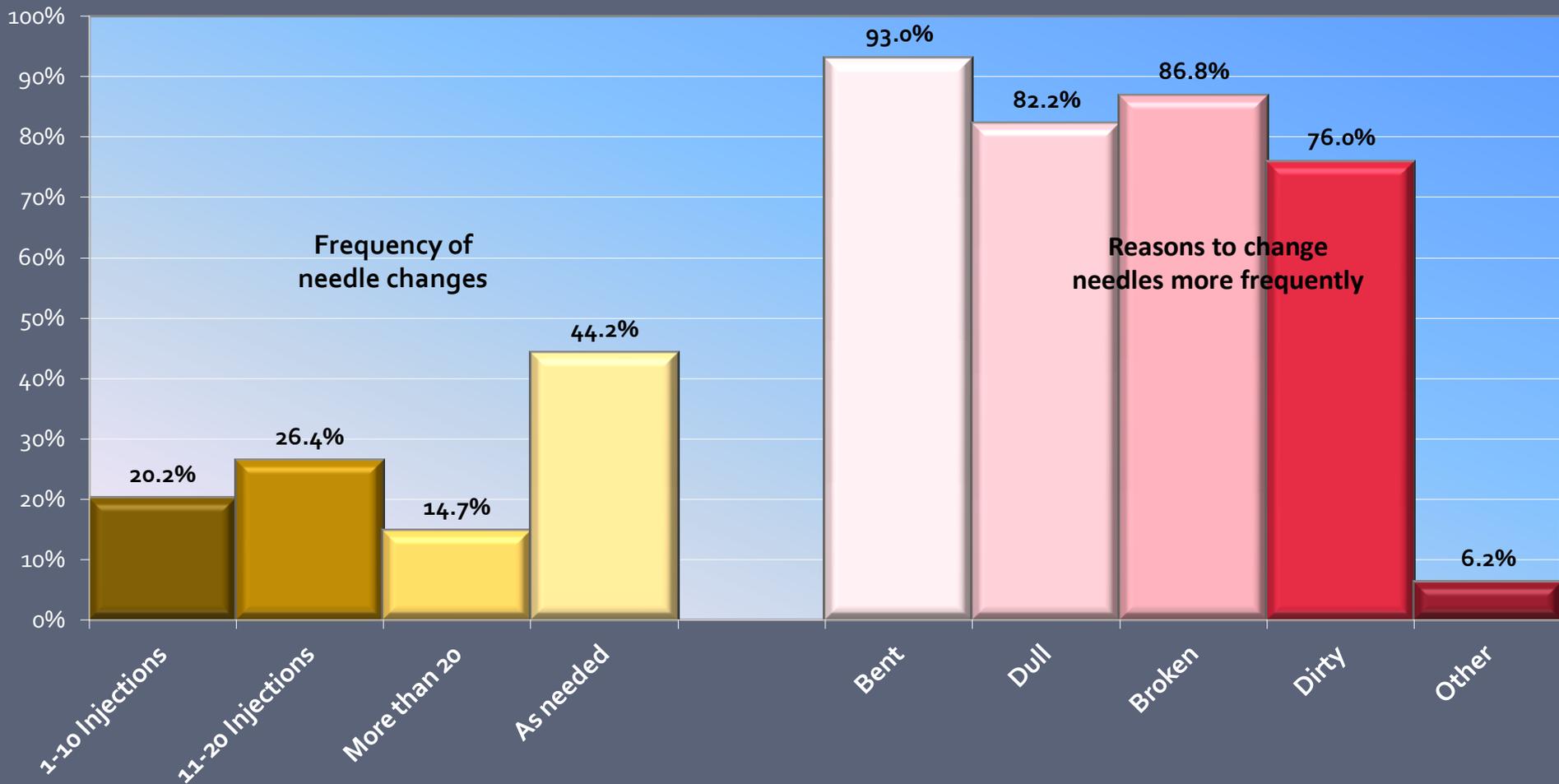


# Survey Results: Syringe Cleaning Methods

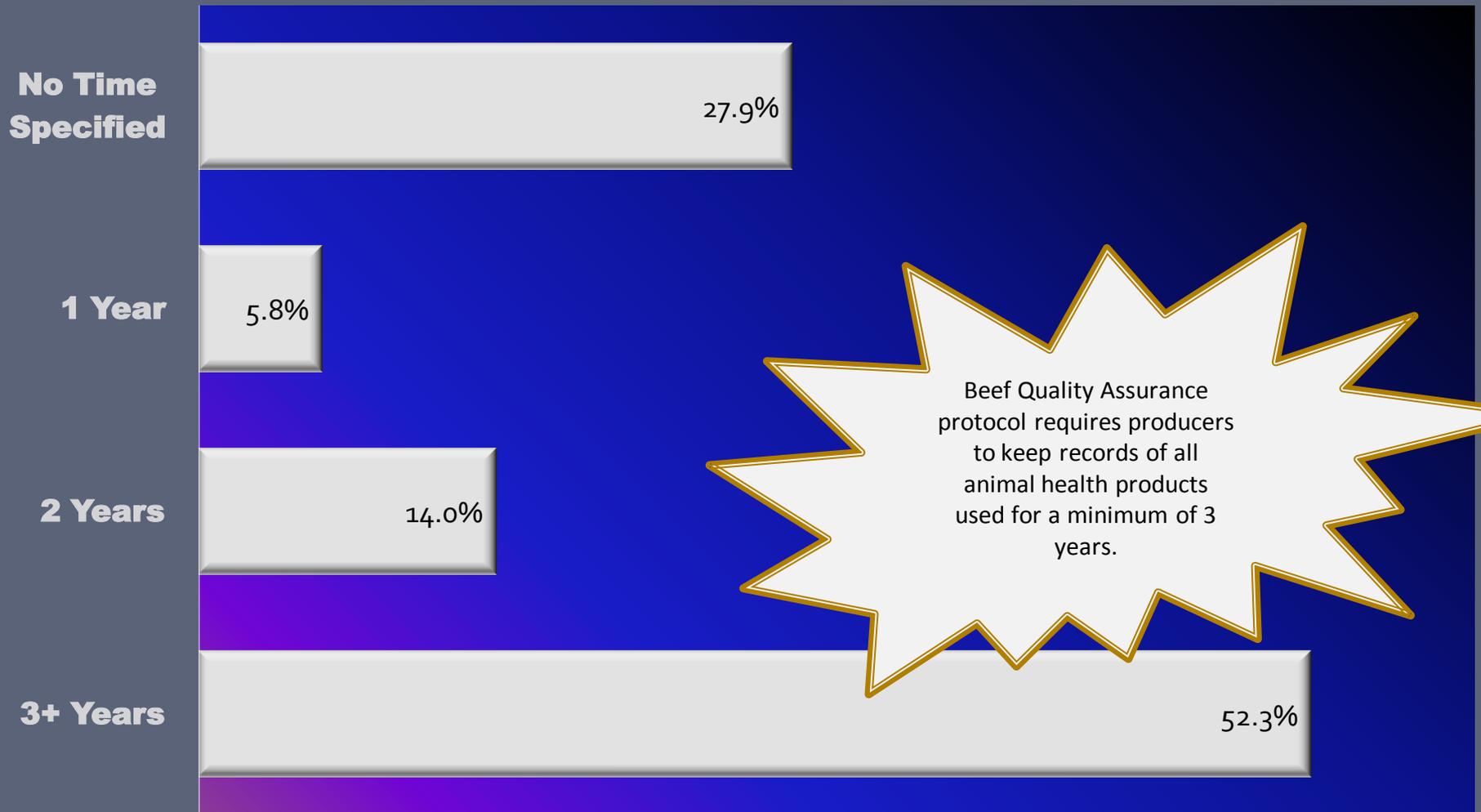
Hot water  
Soap and water  
Disinfectant/alcohol  
Squirt Water/disinfectant through..  
Completely disassemble, clean and  
Other



# Survey Results: Needle Changing Practices



# Survey Results: Recordkeeping Retention Practices



# Survey Results: Product Condition

- 20.4% of products past expiration date
- 27% of bottles were open/partially used
  - 19.1% killed vaccines
  - 13.7% antibiotics
  - 3% modified live vaccines



# Coolers

- Most coolers are not maintaining proper vaccine temperature.
- More coolers are too warm rather than too cold.
- Most of us didn't realize coolers were not effective at maintaining adequate temperatures.



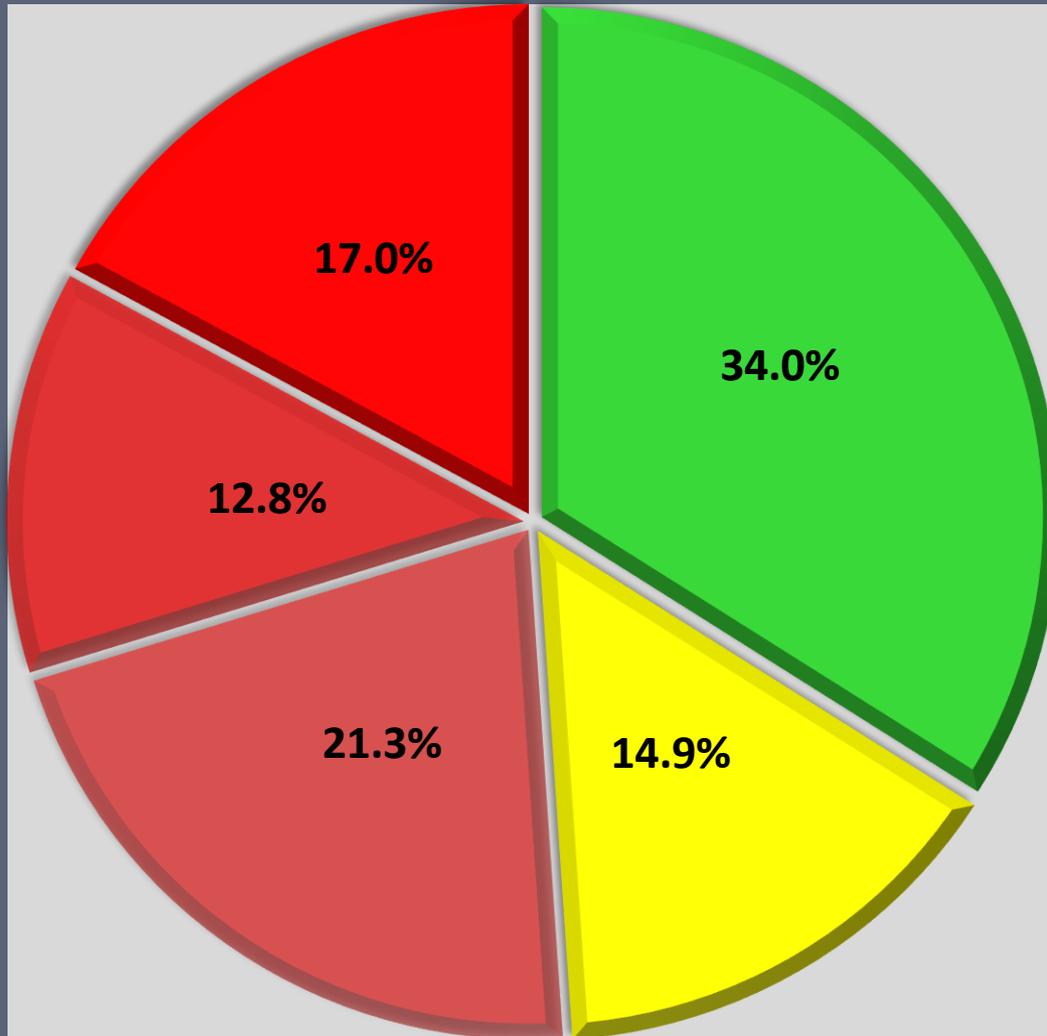
# Retailers and Your Vaccines

SALE  
MIN  
H-H  
ODDENT  
CON  
FERTI  
VEDA



# Retailer Survey Results

## Retailers Refrigerators Within Recommended Temperature Range

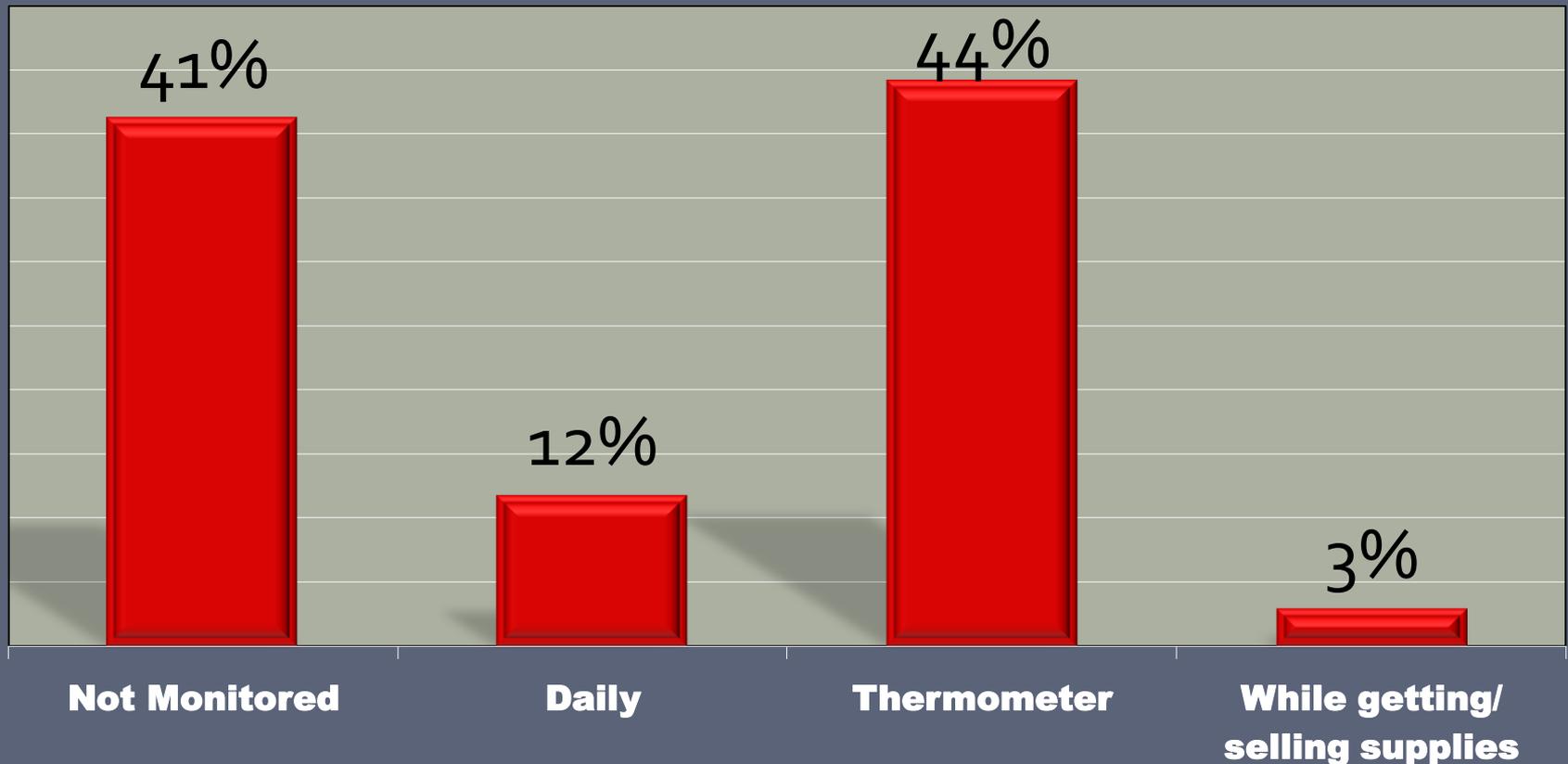


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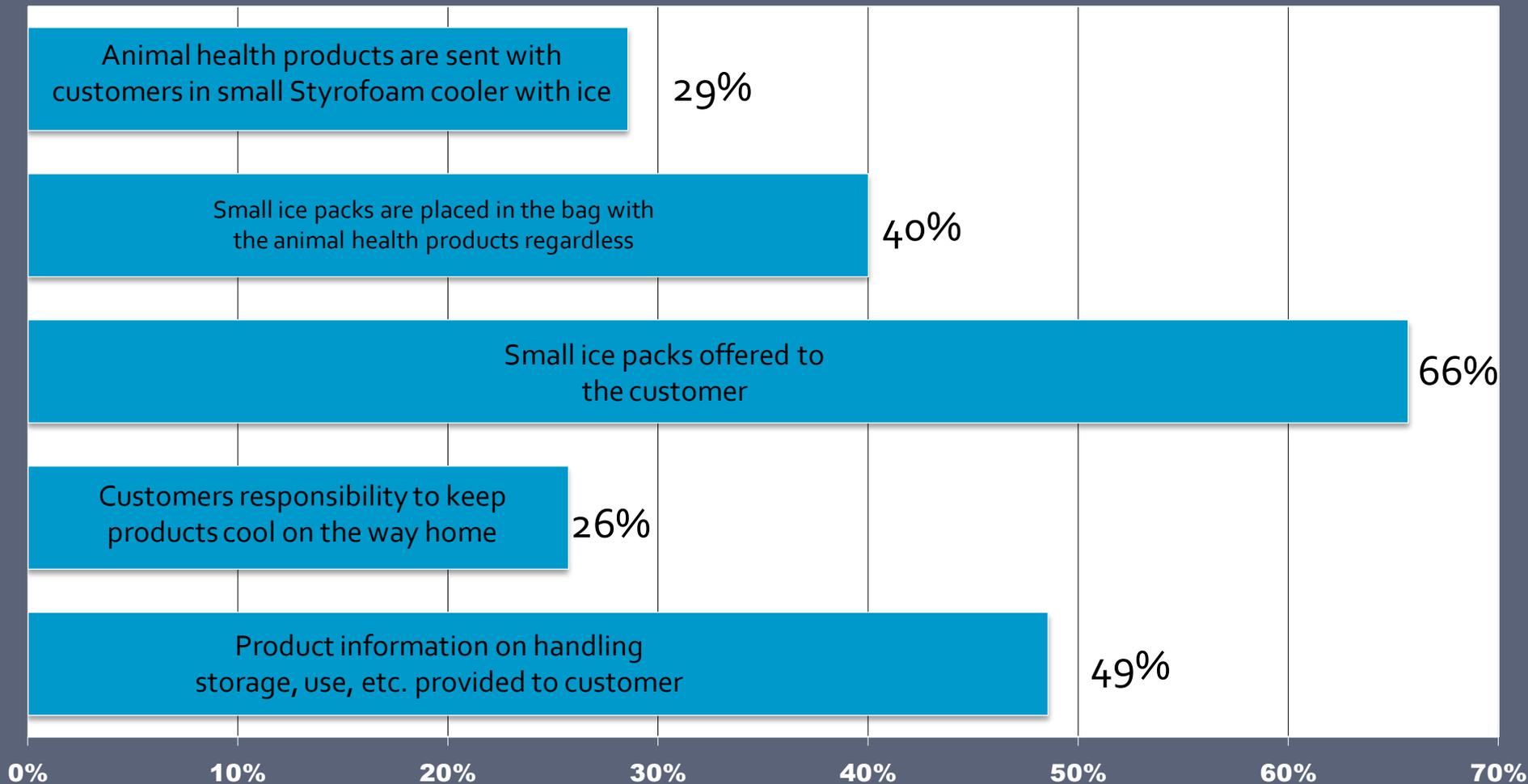
\*According to product manufacturers, the recommended temperature range for animal health products is between 35° Fahrenheit and 45° Fahrenheit.

# Retailer Results: Monitoring Temperatures

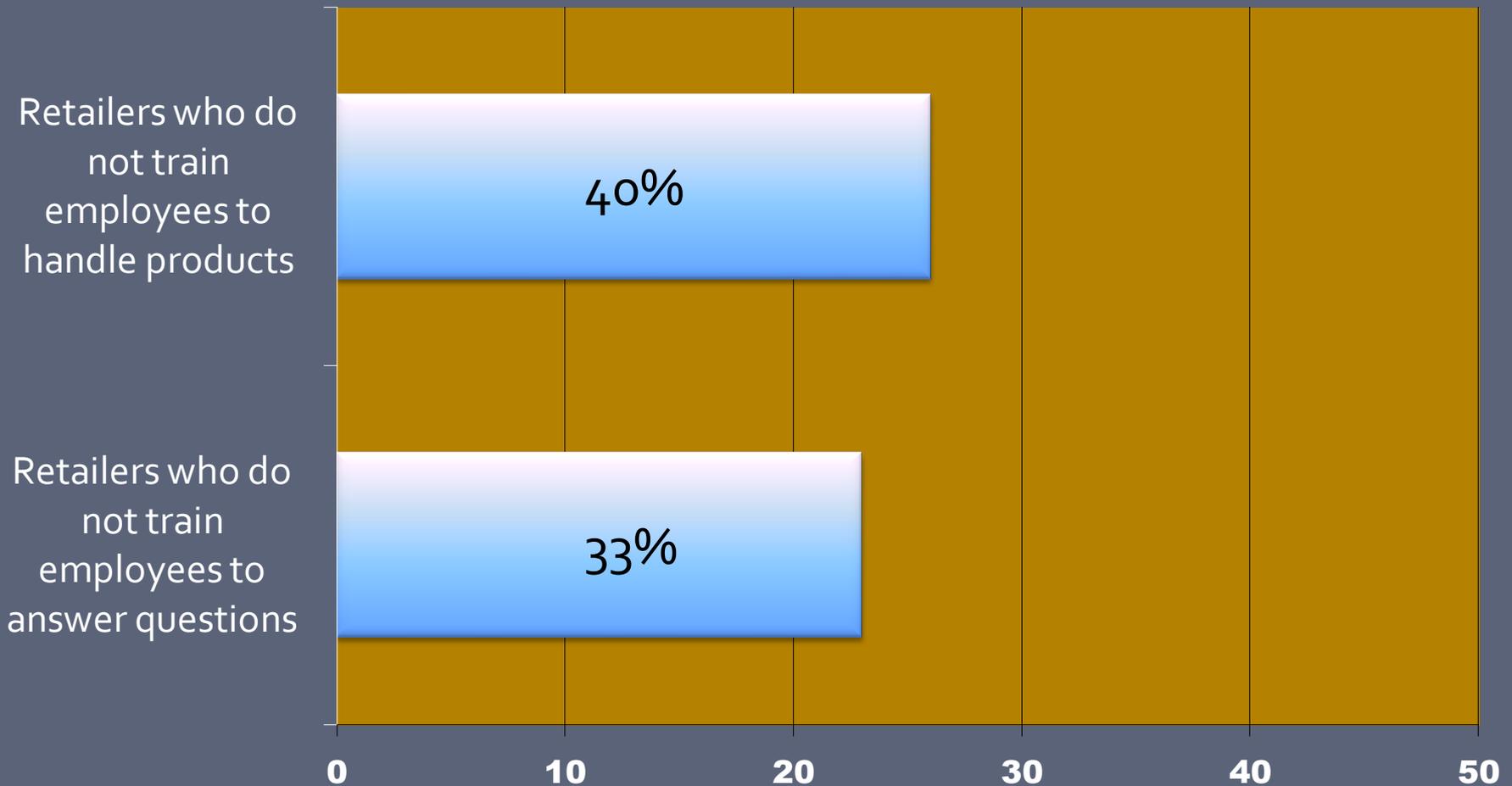
Retailer Frequency of Monitoring Refrigeration Temperatures



# Retailer Results: Common Practices



# Retailer Results: Employee Training



# Best Management Practices: Purchasing Vaccine

- Mail Order:
  - Order on Monday
  - Check cooler as soon as it arrives and refrigerate vaccine immediately
  - If suspicious that vaccine has been too warm or cold, contact distributor immediately



# Best Management Practices: Purchasing Vaccine

- Purchasing locally:
  - Take or request a cooler with **MULTIPLE** ice packs
  - Ask the retailer:
    - Is there a thermometer in the vaccine refrigerator?
    - Is temperature monitored and recorded on a regular basis?
    - Is temperature maintained within the recommended range?
    - Do you check vaccine when it arrives?
    - How do you handle the vaccine after you receive it?

# Best Management Practices: Storing Vaccine

- Use a min/max thermometer.
- Check and log temperatures regularly.
- Discard vaccine that freezes.
- Check expiration dates and discard if expired.
- Store vaccine closest to expiration date in front.
- Don't overstock vaccine because it was a "good deal."
- Train employees, family members, and others.



# Best Management Practices: Coolers

- Pre-cool the cooler for 1 hour.
- Use enough ice.
- Take enough vaccine for the morning or afternoon, not both.
- Keep cooler out of the sunlight.
- Identify any unopened bottles of vaccine left over to use first next time.
- Discard any opened or partially used bottles.
  - Most good for ten days or less



# Conclusions – Idaho Livestock Producers (2010)

- Most producers are careful to store vaccines properly.
- BUT, 67% of refrigerators failed to maintain animal health products at proper temperature.
- Many of those were simply “out of adjustment”.
- Producers follow recommendations of keeping vaccines cool, avoiding sunlight, and proper injection site.
- Improvements are needed in syringe cleaning practices, needle changes, and recordkeeping.

# Conclusions - Retailers

- Major improvements are needed by surveyed retailers.
- 34% of surveyed retailers do a dismal job of storing vaccines properly.
- 41% of retailers surveyed don't monitor temperatures.
- Few provide vaccine handling training to employees.



# Summary

- All vaccines should be refrigerated at 35-45<sup>0</sup> F.
- Read and follow all label directions.
- Dispose of all expired animal health products.
- Do not freeze vaccine.
- Keep vaccine out of sunlight.
- Mix modified live vaccines one bottle at a time.
- Clean syringes with hot water only.
- Record product lot numbers of health products, vaccination dates, and withdrawal times.
- Maintain records for 3 years.

**Questions???**

