Quat Binding: What You Need to Know

LaSalle County Food Service Seminar
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Quat Binding: What You Need to Know

- Introduction
- What it all means
- Demonstration
- Importance of knowing
- Prevention
- Summary
Definitions: Quat

- Quaternary ammonium chloride (quat) is an active ingredient in disinfectants used widely throughout industries; especially foodservice and jan/san
- Popular due to effectiveness against germs, bacteria and viruses and offer long shelf life
- At proper dilution ratios, serves as the most popular sanitizer used within the foodservice industry
  - Low toxicity (food contact safe)
  - Low odor
Definitions: Quat Binding (Absorption)

- **The Science:** Positively charged (cationic) ions in quats bond with the negatively charged (anionic) ions found in cotton and other natural textiles. Opposites attract.
- **In Other Words:** Quat binding (or quat absorption) occurs when quat becomes attracted to and absorbed into fabrics.
- **Everyday Example:** A cotton towel soaking in a bucket of prepared quat sanitizer will inactivate the quat to the point that it is no longer at the proper strength to be active.
What does this mean?

- So while the user thinks they are sanitizing by wiping down surfaces with a “quat-soaked” cotton towel, they’re essentially just wiping surfaces with water.
- It’s time to look past the bucket when testing the sanitizer and focus on the surface.
- Time for a demo!
Importance of Knowing

- Tests have shown that the quat level remaining on a cotton cloth placed in a solution-filled pail was decreased by 50% after soaking for just 10 minutes.

- “As soon as this phenomenon occurs, the quat disinfectant is off label and in violation of federal law” – J. Darrel Hicks, BA, REH, CHESP, certified expert trainer and author of *Infection Prevention for Dummies*

- With repeated practice, this application may contribute or lead to producing microorganisms that are resistant to the disinfectant
Importance of Knowing

- Issue of quat binding (absorption) is still relatively new
- Hicks estimates less than a quarter of environmental services executives are aware of the issue
- Should be a concern for anyone working within food, health or custodial services.
Importance of Knowing

According to research compiled by ITW Pro Brands product management:

- Current testing protocol via government regulations for pH of chemicals in foodservice has no real impact the issue of quat binding
- Fifty percent of the foodservice industry uses cotton rental towels or “bar towels” in their operations
- One out of every six people gets sick from eating contaminated food and 3,000 people die each year from foodborne illnesses
Prevention

To reduce the threat of quat binding, there are 3 ways to apply disinfectant to surfaces; all with pros and cons.

1. Spray & wipe
2. Dip & wipe
3. Soak & wipe
Prevention

Spray & Wipe:  
Directly applying disinfectant to the surface reduces the potential of quat binding.

Cons:  
Dwell times to be effective are difficult to achieve and tedious to monitor  
Overspray creates slip hazards  
Inhalation of chemicals is a concern
Prevention

Dip & Wipe:
Dry cloth is dipped into disinfectant for a few seconds and then excess solution is wrung out.

Cons:
Can initially reduce the problem of quat binding, but absorption can still occur over the time that the same cloth is used.
Messy and spillage can cause slip hazards.
Prevention

Soak & Wipe:

Soak cloths in solution prior to use. Leave the cloths in the buckets between applications.

Cons:

If using cotton or natural fiber cloths, the wipe has time to essentially absorb all the quat for the bucket.
Prevention

So What Can Be Done?

- Only use synthetic-based wipes in combination with quat.
- Test quat solutions often to ensure they are within proper parts per million (ppm) range.
- Change procedures to ensure cotton towels/wipes are only being used in non-critical applications.
Summary

Quat and natural based Wipers are not Compatible

Look to the Sanitizer on the surface pass the Bucket

End users must be driven to sanitize properly
References

CleanLink.com

What Is Quat Binding And Why It Must Be Prevented

BY Becky Mollenkamp
Posted 6/25/15

Penn State University Food Service
http://www.foodsafety.psu.edu