

Technology has advanced our production except...

**Cleaning
and Disinfecting ...**



**Most other areas
of production...**



It's a process....

- Remove or Pile (windrow) litter
(remove left over feed etc.)
- **Apply detergent (foam)**
- **Wash**
- **Let surfaces dry**
- **Apply Disinfectant (foam or spray)**
- Set up building
- **Apply a secondary disinfectant
(fogging)**

CLEANING IS THE KEY

Cleaning comes first!!!

- Removal of organic and inorganic dirt should allow for an 80 – 85% reduction of micro-organisms on the surface
- Where the disinfectant can reduce the rest of the pathogens easier.
- Very important to understand that cleaning and disinfecting are TWO separate ideas. Be very careful with products or protocol's that emphasize 'cleaning / sanitation / disinfection' as one step.

Why should I use a detergent?

- Only so many times a year you have a chance to reduce pathogen load (bacterial and viral) and break the cycle.
- Bacteria and viruses protect themselves with an organic barrier known as 'biofilm'.
- This protective barrier allows bacteria and viruses to remain unharmed by high pressure water or disinfection alone and continue reproducing



What kind of chemical or product should I use to clean my house?

- Alkaline cleaners
- Heavy duty alkaline cleaners are the best for every time cleaning
- Acid cleaners
- Acid type products should only be used for 'special' cleaning purposes or as a one time rotation to your alkaline cleaner

Why are Alkaline cleaners best

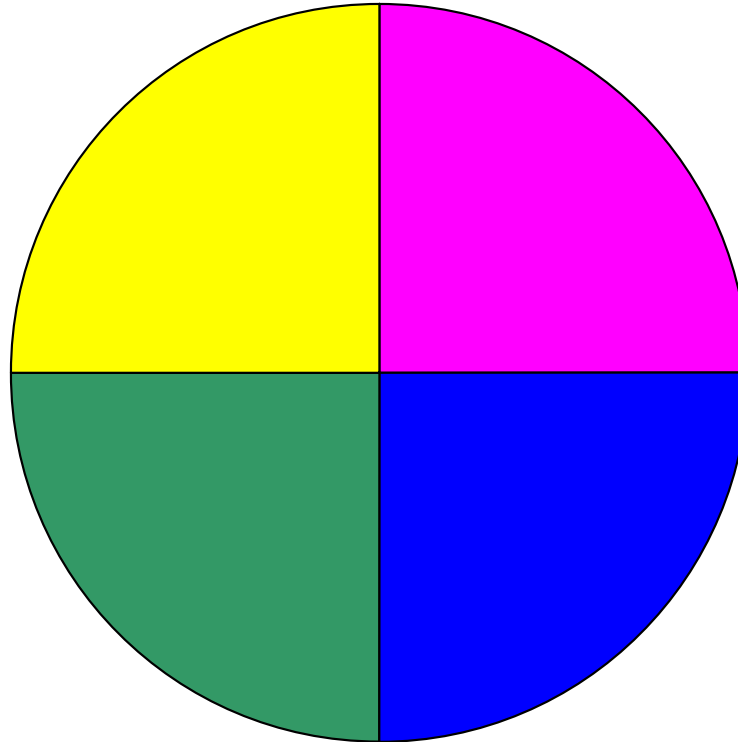
- Animal manure is acidic. Alkaline products ‘neutralize’ those deposits and therefore make them easier to remove.
- Removes fat, proteins and feed byproducts more effectively
- Is less corrosive on equipment and more user friendly on people, vehicles etc.

When to use Acid products

- Remove scale or mineral deposits. Scale is very alkaline hence an acid will help 'neutralize' and remove.
- Good for rotating from alkaline based cleaners to remove alkaline deposits. A 5 to 1 (alkaline to acid) rotation is a commonly used practice.
- Good for descaling drinkers with an acid foaming product

CLEANING WITH WATER

Soaking with water

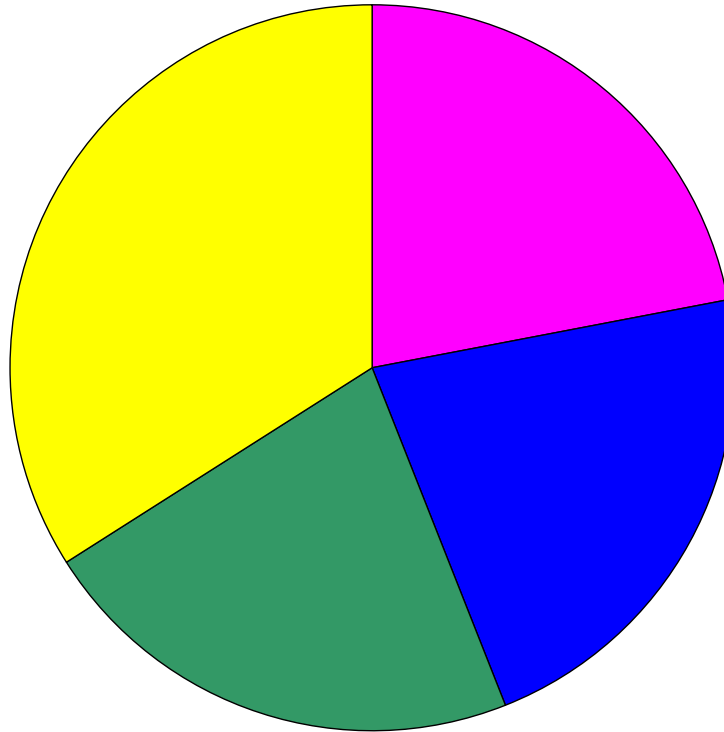


■ cleaning time
■ energy-consumption

■ water-consumption
■ contacttime

CLEANING WITH FOAM

Soaking with foam-cleaner

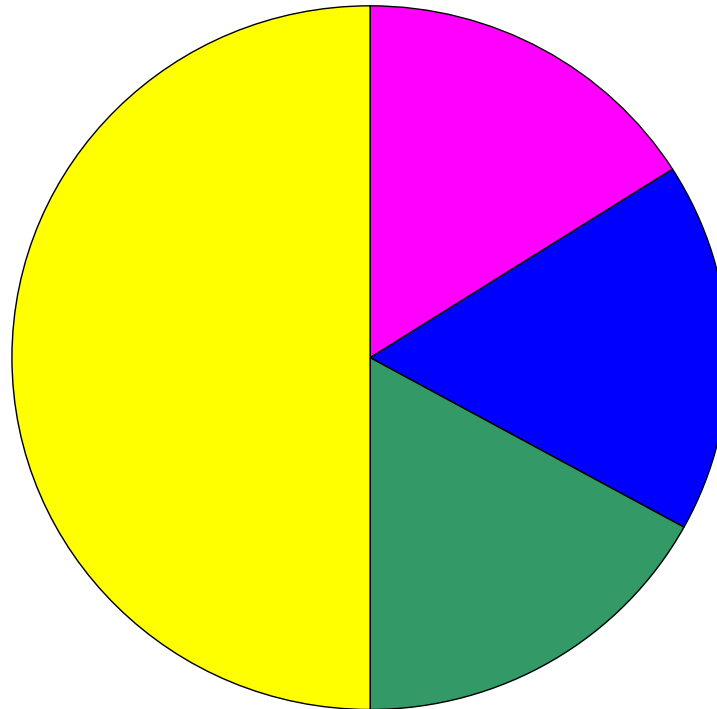


■ cleaning time
■ energy-consumption

■ water consumption (less manure)
■ contacttime foamingproduct

CLEANING WITH GEL

Soaking with BIO-GEL



■ cleaning time

■ energy-consumption

■ water-consumption (less manure)

■ contacttime BIO-GEL

What is foam / gel?

- 90% air generated from foaming wand and pressure
- 9.8% water
- .2% chemical



Characteristics of a good foam / gel

Seeing is believing !

- Find products that create a sticky foam or gel
- Extreme long contact time (viscosity)
- Find a product that can create a good sticky foam or gel and create a long contact time while using low dilutions of the product
- Does NOT dry => easy to rinse pH 11.8
- Does not create more foam / gel while being rinsed or washed off the surface
- Food grade / multiple applications
- Reduces water usage
- Decreases washing time



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• Gets surfaces cleaner allowing disinfectants to work better

Why should we use a foaming detergent

- Labor for cleaning consists of almost 85% of total cleaning and disinfecting cost
- Most claim using a foaming detergent saves 30 to 50% of the time it takes to clean
- In 60 minutes with a pressure washer that discharges 150 gallons per hour, 75 gallons of water may be saved in that time
- Huge \$\$\$\$ savings potential.
- Big environmental impact. Less water and product is used.

High pressure is key

- Low pressure with garden hose application is unrealistic
- High pressure foamers allow you to cover surface area required in larger buildings
- Allows for a more consistent foam
- 700 to 1,000 PSI works good; 1,500 to 2,000 PSI works great.
- Detergent must be able to foam under high pressure

HANDY FOAMER



Whatever the foaming equipment it
should have easy access to any
equipment



Handy Foamer easily connects to any high pressure or washing system



The goal is to get this clean....





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Contact time is the key.....

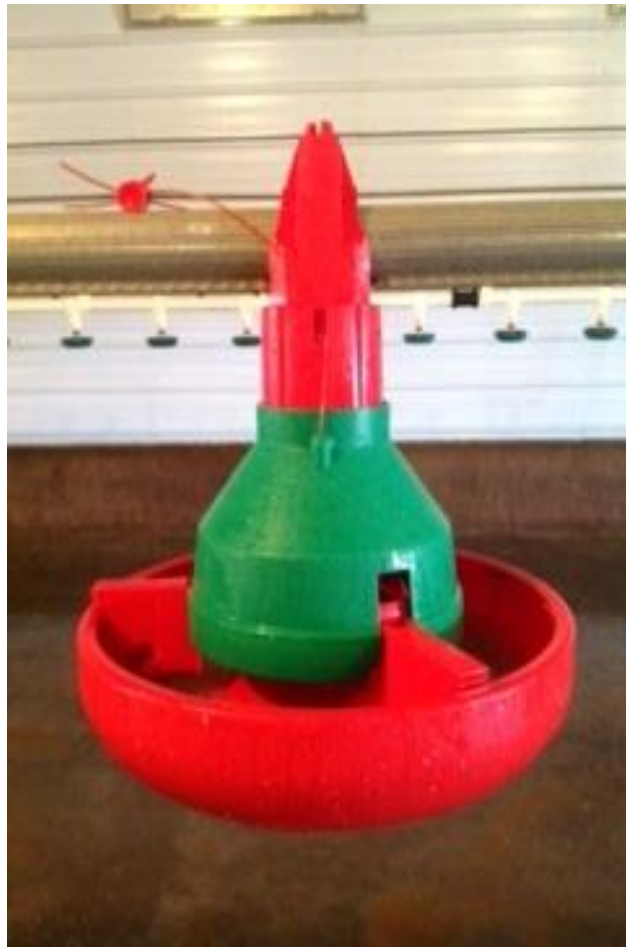


Let the detergent do the work for you....





This is the goal.....CLEAN before
disinfecting



Cleaned with



Cleaned without



Behind a great disinfectant
Stands a great cleaner



Let it dry before disinfecting

- Water creates a barrier that could prevent the disinfectant from reaching the surface
- Wet surfaces dilutes the disinfectant
- 1 mm of water on 360 sq. ft. of floor space equals 1 gallon of water. If you dilute the disinfectant at 1/3 oz per gallon in reality its diluted down to 1/6 oz per gallon in this scenario.
- Just in case the detergent and disinfectant don't match pH ranges. Low pH disinfectants should be used with low pH detergents and vice versa.
- If you do apply the disinfectant on a wet surface you need to double the dilution of your recommended dilution.

What are the trends in disinfecting products

- HBTA phenols have been banned in Europe (“toxic” and “poor biodegradability”)
- Phenols are less efficacious (Phenol Coefficient) / Not sporicidal
- Formaldehyde has been classified as “human carcinogen” by the WHO’s Int’l Agency for Research on Cancer (glutaraldehyde NOT !). Application limitations.
- QAC only (BKC) don’t eliminate Pseudomonas (Gaidar, U. of Galway, ...) and are not effective on fungi.
- Oxidizers (Quick Kill) are good for certain applications and good for rotation of traditional disinfectants but they to have there limitations. Too acidic and not as effective in presence of organic matter
- The market is changing : QAC/glut combination is the TREND: synergistic, efficacious, cost effective and safe (for people, animals, surfaces and the environment)



EPA approved Glut / QAC products on the market

Glutex GQ1

2.5% S.C. QAC
14% Gluteraldehyde
16.5% Total
1:256 label usage
½ oz per gallon

Synergize

26% S.C. QAC
7% Gluteraldehyde
33% Total
1:256 label usage
½ oz per gallon

VIROCID

17% S.C. QAC
7.5% T.C. QAC
10.7% Gluteraldehyde
14.5% Alcohol
49.7% Total
1:400 label usage
1/3 oz per gallon

CARACTERISTICS OF INGREDIENTS

PRODUCTS	UNCAP VIRUS	NAKEd VIRUS	BAC-TERIA	BACT. SPORE	FUNGI YEAST	METAI	PLAS-TIC	PAINT	CON-CRETE	NEGAT. ACTIVITY
1. HYDROXIDE SODA	YES	YES	YES	YES	YES	<u>YES</u>	<u>YES</u>	<u>YES</u>	NO	WEAK
2. PERACETIC ACID	YES	YES	YES	YES	YES	<u>YES</u>	NO	<u>YES</u>	<u>YES</u>	<u>STRONG</u>
3. HALOGENES										
-CHLORIDE	YES	YES	YES	YES	YES	<u>YES</u>	NO	NO	<u>YES</u>	<u>STRONG</u>
-IODIUM	YES	<u>NO</u>	YES	<u>NO</u>	YES	<u>YES</u>	NO	NO	NO	<u>STRONG</u>
4. ALDEHYDES	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>WEAK</u>
5. ALCOHOLS	<u>YES</u>	<u>NO</u>	<u>YES</u>	<u>NO</u>	<u>YES</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>STRONG</u>
6. PHENOLS	YES	<u>NO</u>	YES	<u>NO</u>	YES	NO	NO	NO	NO	<u>STRONG</u>
7. TENSIO-ACT.										
-QUATS	<u>YES</u>	<u>NO</u>	<u>YES</u>	<u>NO</u>	<u>YES</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>WEAK</u>
-AMFOTERES	YES	<u>NO</u>	YES	<u>NO</u>	YES	NO	NO	NO	NO	WEAK

----- black = good

----- red = bad

----- = active ingredients CID LINES



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VIROCID®

Phenol Coefficient

Compares the antimicrobial activity of the tested disinfectant to that of phenol in standardized experimental conditions

Tested Microorganisms	Dilutions of Disinfectant *	Dilutions of Phenol *	PC (Mean \pm SD)
<i>Staphylococcus aureus</i> (2 strains)	1:3,250-1:3,500	1:70	48.2 \pm 1.8
<i>Enterococci</i> spp. (10 strains)	1:4,500-1:7,000	1 :90-1:110	51.5 \pm 5.1
<i>Vibrio</i> spp. (10 strains)	1:2,750-1:4,000	1:90	36.8 \pm 3.3
<i>Pseudomonas aeruginosa</i> (1 strain)	1:2,000	1:85	23.5
<i>E. coli</i> (10 strains)	1:6,000-1:8,500	1:100	71.5 \pm 7.8
<i>Salmonella</i> spp. (10 strains)	1:9,800-1:10,000	1:85-1:100	107.5 \pm 8.2

Testing done showing that GLUT / QAC products
are much more effective than Phenol based
product

⇒ Phenol coefficient of Virocid = 13.9

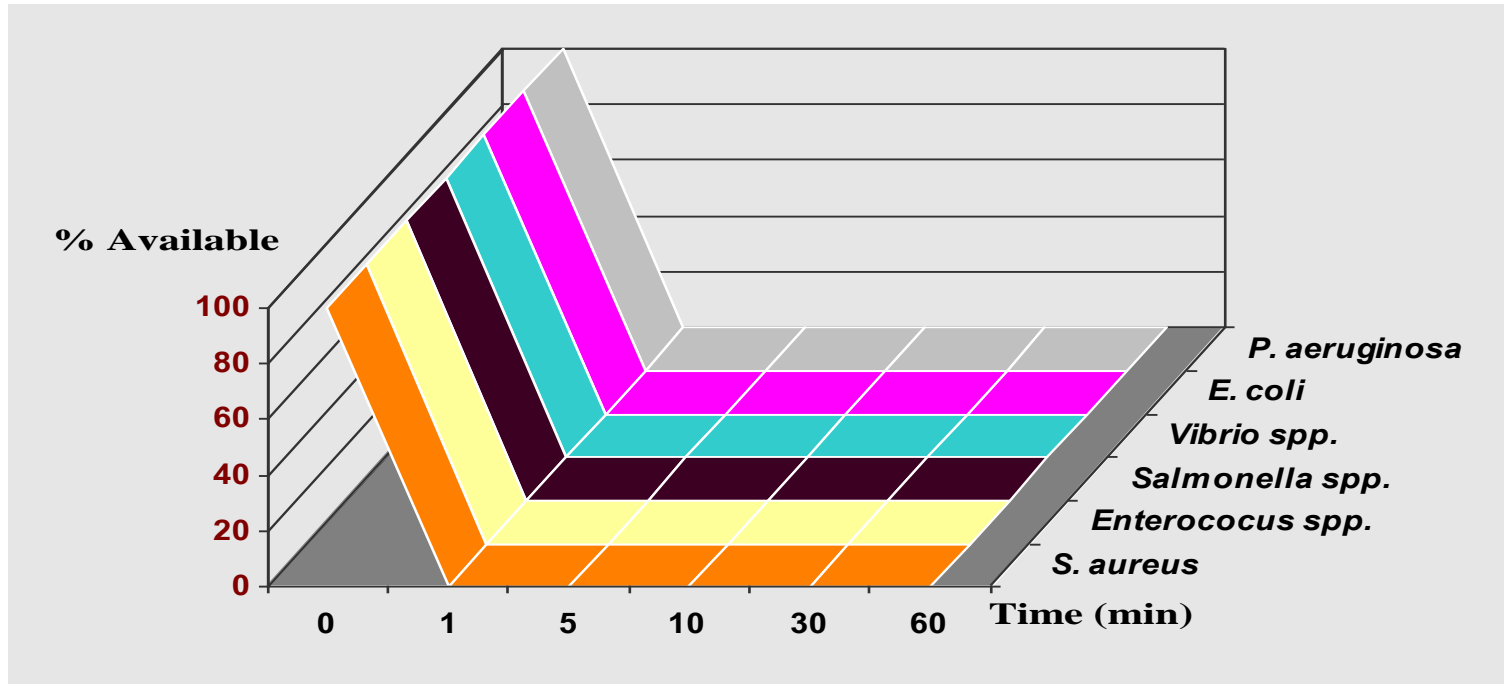
Meaning Virocid is 13.9 times more effective



Contact time for most disinfectants is the key. Most need at least 1 minute of contact time to kill any bug

Residual = how much time will the bug not reappear.

This graph shows up to 1 hour. NO disinfectant can have a residual for days or weeks.



Why foam disinfectants

- Seeing is believing. You can physically see areas you have and have not covered
- Foam allows the disinfectant to have more contact time with the area you are disinfecting
- Allows the disinfectant to stay wet longer. The longer the disinfectant stays wet, the longer it stays active. Once a disinfectant dries it loses its activity.
- Use less product

Foam on equipment 20 minutes after application



Glutaraldehyde exposure limits
in the air (aerosols)

MEL (Maximum Exposure Limit) = 0.05 ppm

15 min exposure time

VIROCID sprayed @ 0.5 % (1:200) = 0.019 ppm (less than half)

VIROCID **foamed** @ 0.5 % (1:200) = 0.016 ppm (less than a third !)

VIROCID fogged @ 10 % (1:10) < 0.04

Conclusion : **VIROCID complies very well with the MEL**



Peracetic Acid (PAA) disinfectants

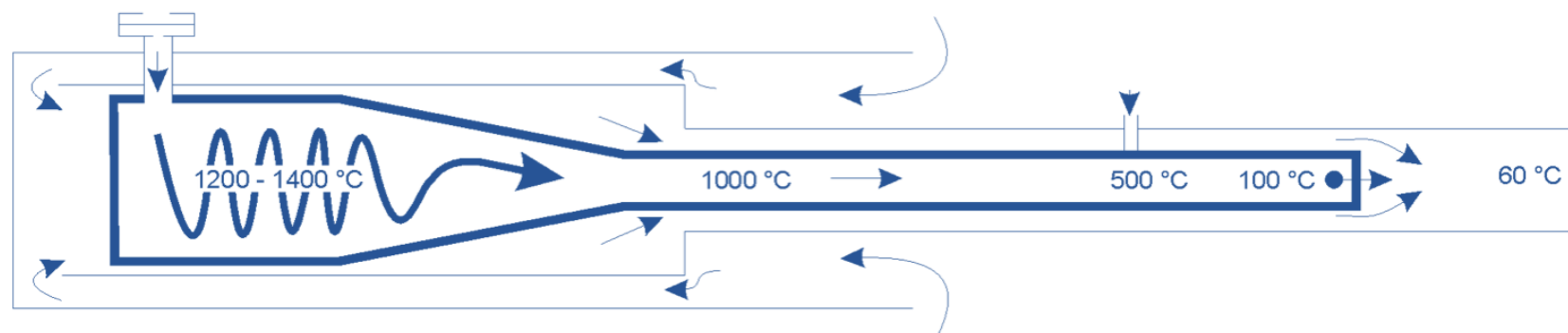
- 26 % Stabilized Hydrogen Peroxide (H₂O₂)
- 5 % Peroxyacetic Acid
- + buffering agents, stabilizers, sequestering agents, corrosion inhibitors, wetting agents (surfactants = foams!)
- **Keno X5, Peraside, Proxitane are examples of EPA registered PAA disinfectants**

- M.O.A.:
 - It instantly ruptures the micro organism's cell walls
 - It interferes with their enzyme systems
 - It disrupts their protein metabolism
- Low pH / Acidic disinfectant (never apply on copper or brass)
- Breaks down into 3 natural elements; CO₂, H₂O and O₂
- 'Quick Kill' disinfectants. Kills within seconds, not minutes like traditional disinfectants.
- Fully Biodegradable / Environmentally friendly

- Foot Dips – Because of its quick kill properties. Much more applicable than traditional disinfectants. Must renew solution daily.
- Pad and floor acidification / disinfection. Keno X5 test against Clostridium spores at 1:50. Shown to work effectively with litter amendments like PLT or Klasp for controlling dermatitis. **MUST BE APPLIED ON THE FLOOR** to be most effective.
- PAA products can be fogged if the fogger has stainless steel gaskets.
- Good products to rotate against traditional disinfectants

- Acidic / low pH. Can be corrosive on certain materials. Never apply on copper or brass.
- More expensive. Must use at higher rates because they do not work as well in the presence of organic matter then Glut / QAC type products.
- Not as user friendly for people

- Fogging is NOT burning smoke but propelling a mist
- Chemical only remains in exhaust for .005 to .1 seconds so there is no heat effect
- Can propel product up to 250 feet
- Fogging is a good secondary disinfection procedure



- Fogging allows for areas to be covered that may be missed by foaming or spraying
- Should be done 1 or 2 days prior to chick placement or birds moving after building is set up and before feed and water is placed in buildings
- Make sure you are always aware of the wind direction when fogging. Fogging in the evening seems to work the best.
- Many tests and documents that show fogging alone can reduce pathogen load in buildings and can effectively control pathogens. (testing data available)
- Fogging a Glut / QAC (Virocid) has shown to be just as effective as Formaldehyde. (testing data available)
- Best to find products that can fog with out enhancers or the need to add other chemicals. **Alcohol** as part of the active ingredients will allow mist to stay suspended longer
- Glut / QAC combinations work best and are non corrosive on fogging equipment

Dramm K-22 O Fogger



Video of building being fogged





10 minutes later

20 minutes later

30 minutes later



Rotation.... Is it necessary

- Simply put – NO!
- Rotation is now a myth and unnecessary with modern disinfectants like Glut/QAC or PAA combination products
- Rotation theory came from the days of using single ingredient disinfectants that didn't have broad spectrum capabilities.
- This 'tolerance' or 'resistance' could occur when using products like Iodine, Quats or Phenols that when used would allow naked viruses and spore-forming bacteria to survive.
- Disinfectants don't work like antibiotics. Antibiotics use a key to open a lock. If the lock changes the antibiotic may no longer work. Disinfectants use a sledge hammer.

Rotation continued....

- As long as the disinfectants meet the recommended requirements; broad spectrum (fungicide, bactericide, virucide, sporicide), verified independently, synergy of components, good buffering agents, versatility, some residual action, guaranteed composition, proven label.
- Consistent rotation leads to a logistics nightmare and increases the chances of human error.
- If you are going to rotate, rotate wisely. Use a product with a completely different mode of action from product you are using. Glut / QAC should rotate to a PAA type product. For example: Virocid should be rotated with Keno X5.
- Choose 1 or 2 products depending on applications and stick with them.

True cost of disinfectants

- Understand the label and usage rates of the product you are using
- Know the actual use dilution and cost of the product
- For example; If you buy a product for \$30 per gallon / use dilution of 1:400 / $30 \text{ divided by } 400$ / the cost is .075 cents per gallon.
- If you buy a product for \$20 per gallon / use dilution of 1:256 / $20 \text{ divided by } 256$ / the cost is .078 cents per gallon
- Just because a product is cheaper per gallon doesn't mean its truly the cheaper product
- How versatile is the product. Can it be applied with multiple applications and on all surfaces.
- Is manufacturer ISO 9001 certified, GMP certified? Expiration dates on products?
- Do they meet the biodegradable standards?

SAFETY FIRST

- Follow MSDS precautions and directions for disposal
- Always wear appropriate PPE
- Apply product under label usage directions

Thank you!

- The little things make a BIG difference!
- Any Questions?

