NOSB SANITIZER PANEL DISCUSSION

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Dr. Joseph Morelli
Corporate Scientist
Food & Beverage Division

ABSTRACT QUESTION 7

Hierarchy in active ingredients meeting OFPA criteria better than others

- Difficult - Relative weighting of evaluation criteria vary by application
- Tradeoffs - Volumes, Efficiency (ppm vs %), Safety, Environmental Fate, Compatibility

Features	Considerations	Applications

• Microbial control goals
• Process/Mode of Application
• Ease of Use/Compliance
• Multi-functional Attributes
	• Efficacy/Spectrum of Kill
	• Safety
	• Residues
	• Environmental Fate
	• Material Compatibility
	• Volume / Scale
	• Cost
		• Environmental Sanitizer
		  • Food Safety
		  • Livestock Biosecurity
		• Food Contact Sanitizer
		• Skin/Teat Antiseptic
		• Water Treatment
		• Food Tissue Treatment

ABSTRACT QUESTION 7

Hierarchy in active ingredients meeting OFPA criteria better than others

Illustrations

Alcohol – low volume antiseptic vs safety risk at high volume

Peroxide – favorable residue – special applications (conc. / temperature) to be effective

Chlorine Dioxide – Efficient water treatment, no THM, but not for broad surface area treatment

Organic Acids (ie Lactic Acid)/ Essential Oils – Concentration and spectrum of kill limited

UV/Vis – No residue - Application limited/ Shadow Effect

Peroxyacid – Efficient (ppm), residue favorable, vs material compatibility

- Stainless steel in food process equipment vs host of materials in livestock barns
- Advantages in performance and soil tolerance vs chlorine – higher use cost

ANATOMY OF CLEANERS AND SANITIZERS

Common Ingredient Classes

Various ingredient classes are employed in cleaners and sanitizers to meet functional needs

Antiseptic (Teat Disinfectant)	Alkaline Cleaner	Acid Cleaner	General Cleaner	Sanitizer
• **Active** • Emollients • pH Buffering • Surfactants/ Wetting Agents • *Thickeners* • Colorants • *Film Formers*	• No Active • Alkalinity • Sequestrants • Dispersants • Surfactants • *Hypochlorite (Na)*	• No Active • Acid (Mineral + Organic) • Surfactants • Stabilizers	• No Active • Surfactants/ foaming agents • Builders • pH Buffering • *Solvents* • *Enzymes*	• **Active** • pH Buffering • *Stabilizers* • *Surfactants/ Foaming Agents* • *Couplers*

Italic – Optional ingredient depending on product/application

SYNTHETICS AND NOMENCLATURE

Awareness

- Limitations of common names and CAS# to identify Food Additives/Drug Inactive Ingredients

Example of Common Surfactant

Common Names Listed	Reference
Alpha-hydro-omega-hydroxypoly(oxyethylene) poly(oxypropylene) poly (oxyethylene) block copolymer	21 CFR 178.1010 21 CFR 172.808
polyoxyethylene-polyoxypropylene block polymers	21 CFR 178.1010
Polyoxypropylene-polyoxyethylene glycol	21 CFR 176.180
Polyoxypropylene-polyoxethylene condensate	21 CFR 176.210
Ethylene glycol- propylene glycol polymer	FCN 1020
Oxirane, methyl-, polymer with oxirane	40 CFR 180.940
Poly(ethylene oxide-co-propylene oxide), block	Indirect Food Additive Database
Poloxamer	FDA Drug Inactive Database

SYNTHETICS - PRODUCER/HANDLER

Harmonization?

- In food production, common cleaners and sanitizers are used
  - CIP milking equipment (producer) and milk processing equipment (handler)

- Synthetics for sanitizers (EPA Pesticide) – 205.603(e) (producer) vs 205.605 (handler)

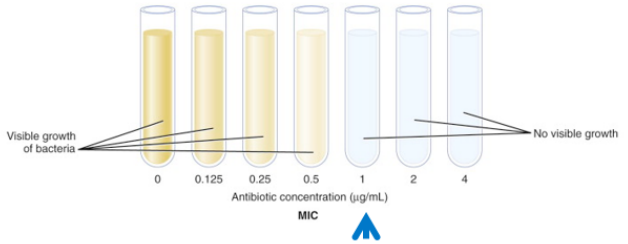
ABSTRACT QUESTION 5

Susceptibility of Resistance Over Time for Sanitizers/Rotation

- Antibiotic resistance is global health concern
- Antibiotic vs sanitizer
  - Inside body – external surfaces
  - Low dose – higher conc
  - Specific vs non-specific mode of kill
- MIC Test not a proper metric for resistance of sanitizers
- Has the science demonstrated acquired resistance under real world/label use concentrations?
- Rotation: Resistance vs change in microflora that favor alternative sanitizer (bacteria/yeasts/molds)

MIC Test

- High organic burden
- 24 hours of exposure
- Very low concentrations
  - 0.5 – 2 ppm QACs



Minimum inhibitory concentration (MIC) = lowest concentration to inhibit growth over 24 hours

AOAC 960.09

- No organic burden
- Very short contact times (≤1 minute)
- Real-world use-solution concentrations
  - 200 – 800 ppm QACs
- Required ≥5 log reduction to pass

QUESTIONS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