



3-A Sanitary Standards, Inc.

2015 Annual Meeting & Education Program

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Pet Food Processing

New Attention to Hygienic Design

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Diamond Pet Foods



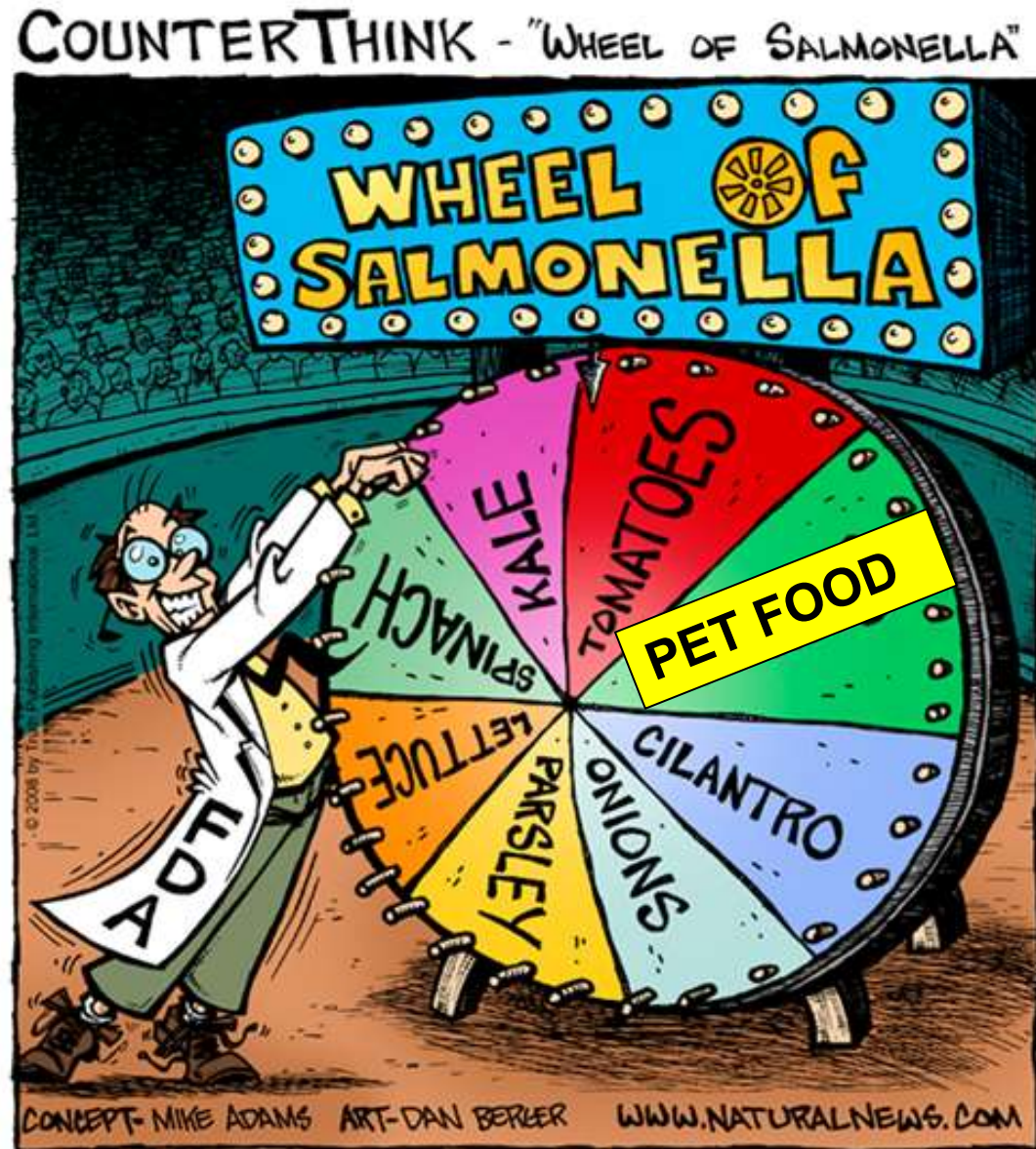
The Journey of Legacy Equipment to Hygienic Design

- Pet Food Industry Overview
- Major Challenges
 - Production practices
 - Legacy equipment
 - Equipment Design
 - Cleaning and Sanitation
- Journey Past, Present, Future



Pet Food Industry Overview

- Melamine - 2007
- Salmonella - 2008
- Zero Tolerance
- Risk





What is Risk?



- Real risk

- 33,000 car crash deaths
- 443,000 smoking
- 36,500 drug overdose
- 3500 drown
- 75 lighting strikes
- 20 shark attacks

- Perceived risk

- Insurance company models
 - # of tickets
 - # of wrecks
 - Age
 - Gender
 - marital status



CDC Yearly Estimates of Foodborne Illness

4,423,310

2,117,442

1,900,000

589,310

All Pet Food
2008-2012

<150

Produce

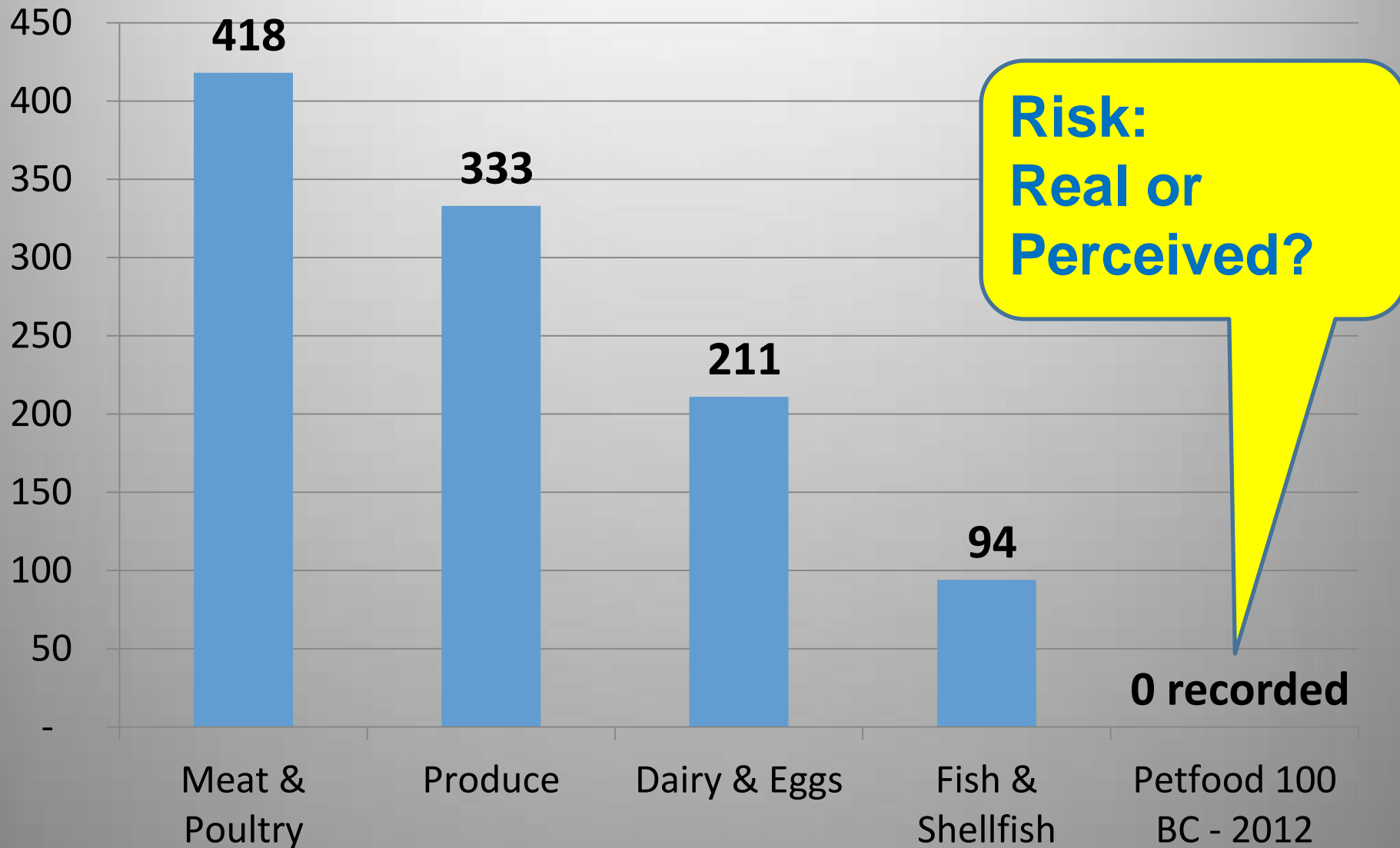
Meat & Poultry

Dairy & Eggs

Fish & Shellfish

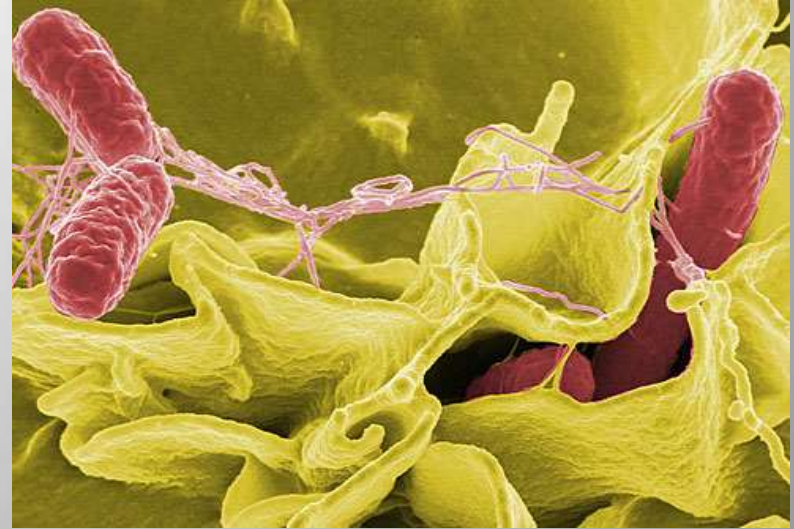
Petfood 2008-2012

CDC Yearly Estimates of Foodborne Deaths



Pet Food Industry

- ***Salmonella* Risk**
 - REAL?
 - PERCIEVED?
- **Does it really matter?**



How to Control *SALMONELLA*?

- Keep it out of your plant!
- Prevent it from moving around.
- Prevent growth (multiplying).
- Locate it.
- Eliminate it.



Major Challenges

- **Production practices**
 - Separation
 - Air handling
 - GMP's/Culture change



Lathrop, CA



Ripon, CA

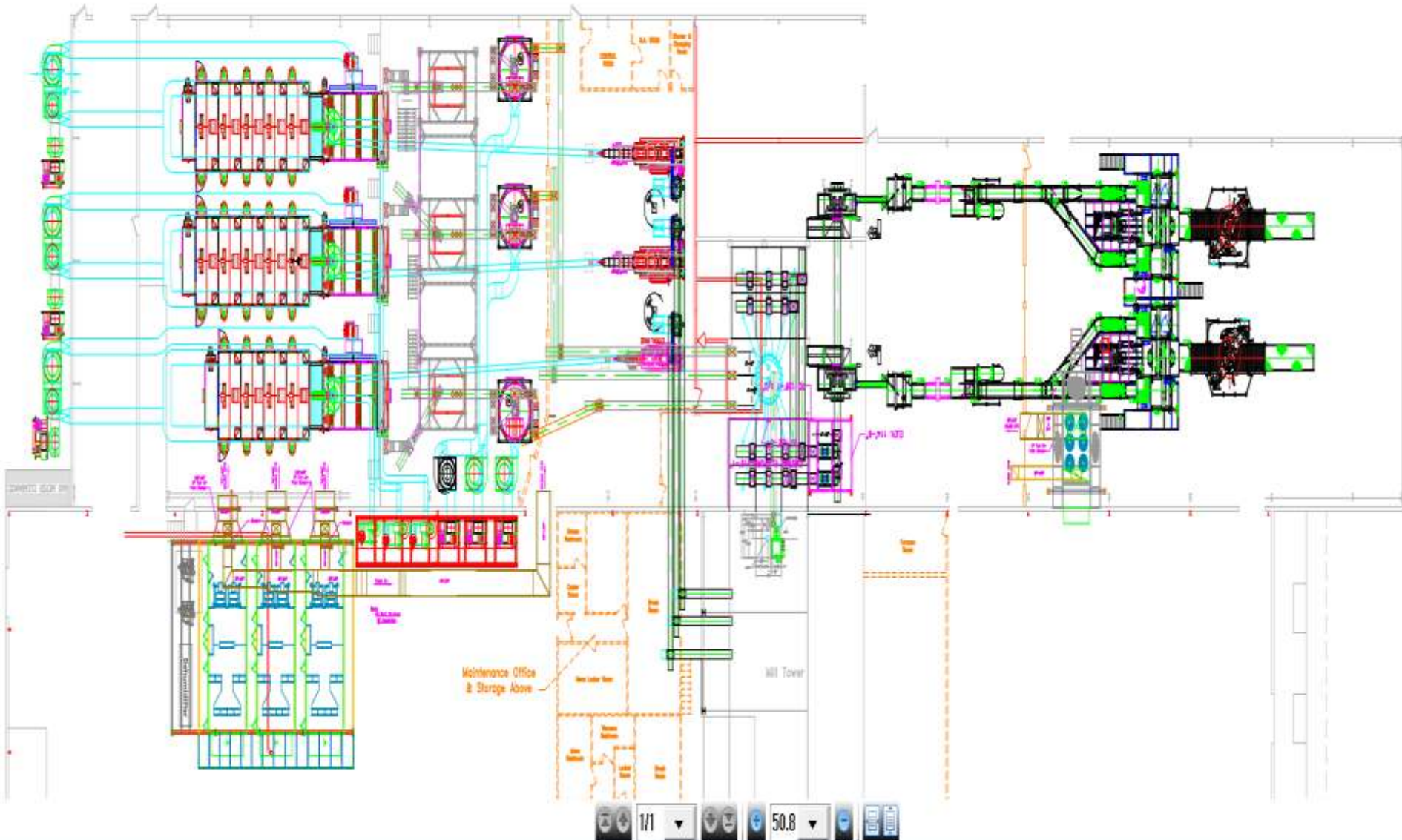


Meta, MO



Gaston, SC

Lathrop Plant Separation



Major Challenges

- **Legacy equipment**
- **Equipment Design**
 - Sanitary design standards – non existent
- **Cleaning and Sanitation**
 - SSOP's – how do we clean?
 - Establishing frequencies
 - C&S verification, validation
























































































Cleaning and Sanitation SOP's (over 100)

-  Diamond SSOP 1.- Mill Area
-  Diamond SSOP 1.2 - Top floor of Mill Area
-  Diamond SSOP 1.3- Mixing Area
-  Diamond SSOP 1.4 - Top of Mixing Office
-  Diamond SSOP 1.5 - Cleaning of Mixing Office
-  Diamond SSOP 1.6 - Grate Floor of Mill Area
-  Diamond SSOP 1.7 - Bin Floor of Mill Area
-  Diamond SSOP 1.8 - Micro Deck
-  Diamond SSOP 1.9 - Micro Bins...
-  Diamond SSOP 1.11 - Handrails and Auxilliary Equipment on Micro Deck
-  Diamond SSOP 1.21 - Extrusion Drains
-  Diamond SSOP 1.22 - Meat Cell Drains
-  Diamond SSOP 1.23 - Top of Extrusion Office
-  Diamond SSOP 1.24 - Drains
-  Diamond SSOP 1.25 - Grinder Hopper
-  Diamond SSOP 1.26 - Catwalk and Equipment above the Extruders
-  Diamond SSOP 1.27 extruders 1,2,and3
-  Diamond SSOP 1.28 - Vertical Cooler Cyclones
-  Diamond SSOP 1.29 - Die Plate Carts
-  Diamond SSOP 1.31 - Top of Dryers
-  Diamond SSOP 1.32 - Dryer Floor Area
-  Diamond SSOP 1.33 - Dryer Fines Area
-  Diamond SSOP 1.34 - Dryer Cyclones
-  Diamond SSOP 1.35 Dryer 2 and3
-  Diamond SSOP 1.36 Dryer 1
-  Diamond SSOP 1.37 - Legs
-  Diamond SSOP 1.41 - Dry Digest Area
-  Diamond SSOP 1.42 - Mixer_coater area
-  Diamond SSOP 1.43 - Probiotic Dispensers
-  Diamond SSOP 1.51 - Above Packaging_Equipment Walls Etc
-  Diamond SSOP 1.51-1 - Sample line bagger
-  Diamond SSOP 1.51-2 North and South Mixers
-  Diamond SSOP 1.51-3- North and South Mixers
-  Diamond SSOP 1.51-4- Flat Screeners
-  Diamond SSOP 1.51-5- North and South Screener
-  Diamond SSOP 1.52 - Packaging Area
-  Diamond SSOP 1.53 - HANDRAILS on PALLETIZERS
-  Diamond SSOP 1.54 - Sample Line
-  Diamond SSOP 1.55 - ROBOT AREA and BOX MAKER
-  Diamond SSOP 1.56 - HOPPER and SCALE PLATFORM AREA
- Diamond SSOP 1.57 - Bagging Line

-  Diamond SSOP 1.58- Baggers 1 & 2
-  Diamond SSOP 1.59- UVA bagger
-  Diamond SSOP 1.61 - Top of Finish Product Bins
-  Diamond SSOP 1.62 - Bindicator Boxes_Bin Floor of Mill Area
-  Diamond SSOP 1.63 - Inside and Around Silos
-  Diamond SSOP 1.64 - Bin vents and Filters
-  Diamond SSOP 1.71 - Organize Partial Pallet Rack
-  Diamond SSOP 1.72 - Pallet Area
-  Diamond SSOP 1.73 - Dock Area 1 thru 7
-  Diamond SSOP 1.74 - Loading Dock Area (Outside)
-  Diamond SSOP 1.75 - Warehouses
-  Diamond SSOP 1.76 - Bad Damaged Pallet Area
-  Diamond SSOP 1.81 - Desk Area Scale House
-  Diamond SSOP 1.82 - Platform Area around Scales
-  Diamond SSOP 1.83 - Fat Pump Unloading Station
-  Diamond SSOP 1.83.1 - Fat Pump fiter and hose cleaning
-  Diamond SSOP 1.91 - Bathrooms Breakrooms Lockers
-  Diamond SSOP 1.92 - Changing Rooms
-  Diamond SSOP 1.93 - Battery Charging Area
-  Diamond SSOP 1.94 - General Office Cleaning_inside and out
-  Diamond SSOP 1.95 - Desk and Computer Cabinet Area
-  Diamond SSOP 1.96 - Computer Screens and Stands
-  Diamond SSOP 1.97 - Ladder Area
-  Diamond SSOP 1.98 - Trash Compactor
-  Diamond SSOP 1.99 - Waste Bin Area (Outside)
-  Diamond SSOP 1.911 - Inside Trash Cans
-  Diamond SSOP 1.912 - Outside Trash Cans
-  Diamond SSOP 1.913 Hand washers and Dryers
-  Diamond SSOP 1.914 - Boot Washers
-  Diamond SSOP 1.915 - Bulk Product Bins
-  Diamond SSOP 1.916 Storm Drain
-  Diamond SSOP 1.917 Fork Truck
-  Diamond SSOP 1.918- Food Grade Washout Procedure
-  Diamond SSOP 1.919 - Automatic Bootwasher Solo-Traditio for Extrusion Dryer entry
-  Diamond SSOP 1.919-1 - Automatic Bootwasher Solo-Traditio Manual Cleaning for Extrusion Dryer entry
-  Diamond SSOP 10.1 - ACTRIL COLD STERILANT
-  Diamond SSOP 10.2 - Lockout tagout of North Screener
-  Diamond SSOP 10.3 - Lockout tagout of South Screener
-  Diamond SSOP 10.4 CAPA cleaning
-  Diamond SSOP 10.5 - F.P. Bin_Silo cleaning

-  01 Extruder Barrel
-  02 Extuder-Conditioner & Floor
-  03 Clam Shell
-  04 Wear Back
-  05 Wet Cyclone
-  06 Airlock
-  07 Spreader Arm
-  08 Vertical Cooler
-  09 Bucket Elevator Magnet
-  11 Dryer
-  12 Packaging Shakers
-  13 Shaker Spout
-  14 Coaters
-  15 Weigh Belts
-  16 Bagger Scales
-  17 UVA
-  18 Wet . Dry Vacuum
-  19 screens for fat pump - mixer coater room



Cleaning and Sanitation SOP's

DIAMOND PET FOODS

CLEANOUT SSOG #13

AREA: SHAKER SPOUT



NOTE: Before use of sanitation products employee must receive appropriate training in the safe and proper use of product.



Products:	Equipment	Safety Equipment
Alpet D2 Alpet D2 wipes Perasan Lactic acid	White scraper Rags 9/16" wrench/socket Scouring pads Microfiber pads Extension pole Vacuum Extension cord Pump sprayer	Safety glasses Bump cap Ear plugs Blue gloves Face shield Green gloves Tyvek suit

Procedure:

NOTE: All equipment used on food contact surfaces must be sanitized with Alpet D2 prior to use, and re-sanitized if it touches anything that is a potential contaminant (i.e., anything not sanitized). This includes employee's hands and arms.

1. Follow proper lockout procedure for shaker spout
2. Open shaker
3. QC pre-swab
4. Spray inside of shaker with lactic acid
5. Close shaker
6. Open shaker spout access door
7. Use scouring pad to remove buildup
 - a. Use extension pole to reach as far as possible

Areas of Focus



Cleaning and Sanitization Strategies

- **Cleaning and Sanitization: How and When??**
 - **Wet clean vs. dry clean**
 - **New technology**
 - **Dry fog**
 - **Ozone / Chlorine dioxide**
 - **Probiotics**
 - **New chemicals vs. old chemicals**
 - **Peracetic acid**
 - **Acidified Calcium Sulfate**
 - **Lactic Acid**
 - **New Monitoring Technology**



New Science for Sample Collection



HOLLISON

Collection & Sample Handling

Continuous

Traditional focus on detection

Shift focus to collection

Grab sampling

Statistics

Heterogeneous

Reproducibility

Selectivity

Specificity

Incubation

Detection limits

Speed

Concentration

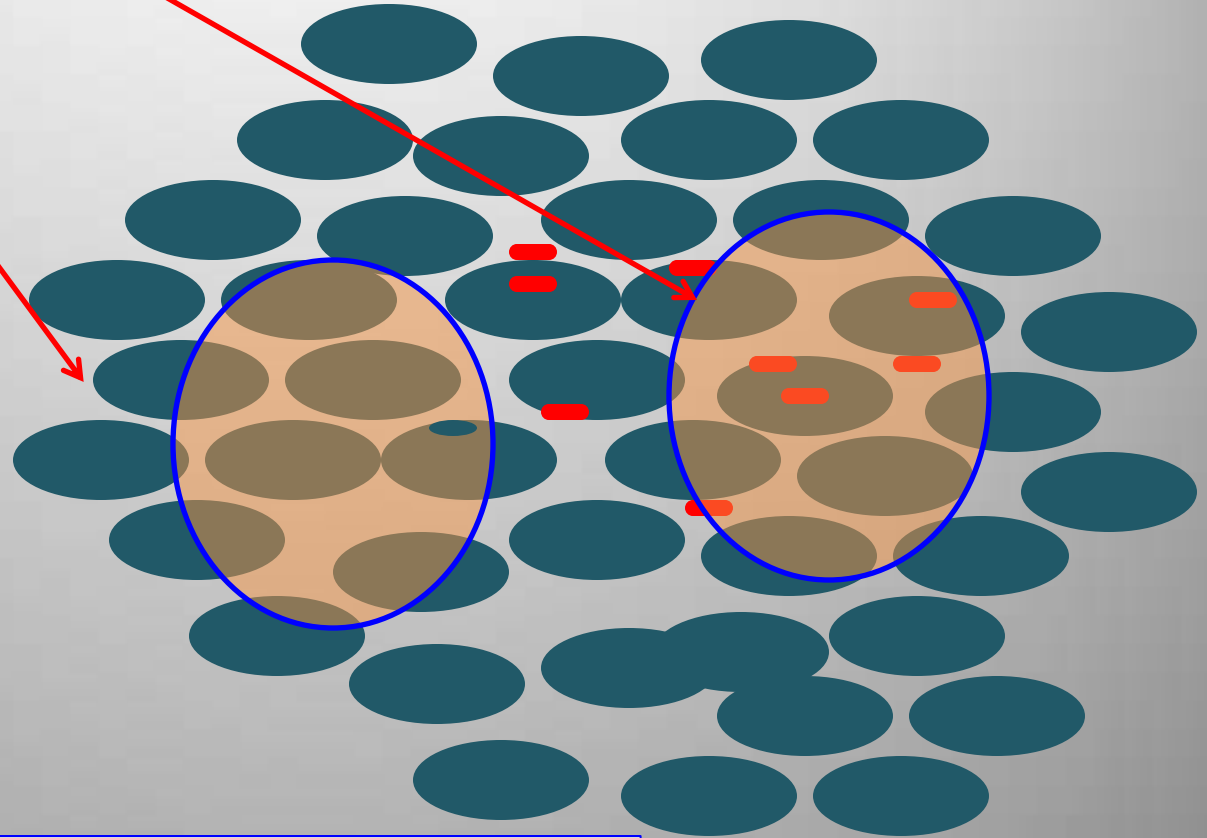
Near Real-Time

Grab Sampling

Traditional “Grab Sample”

Positive
Contamination

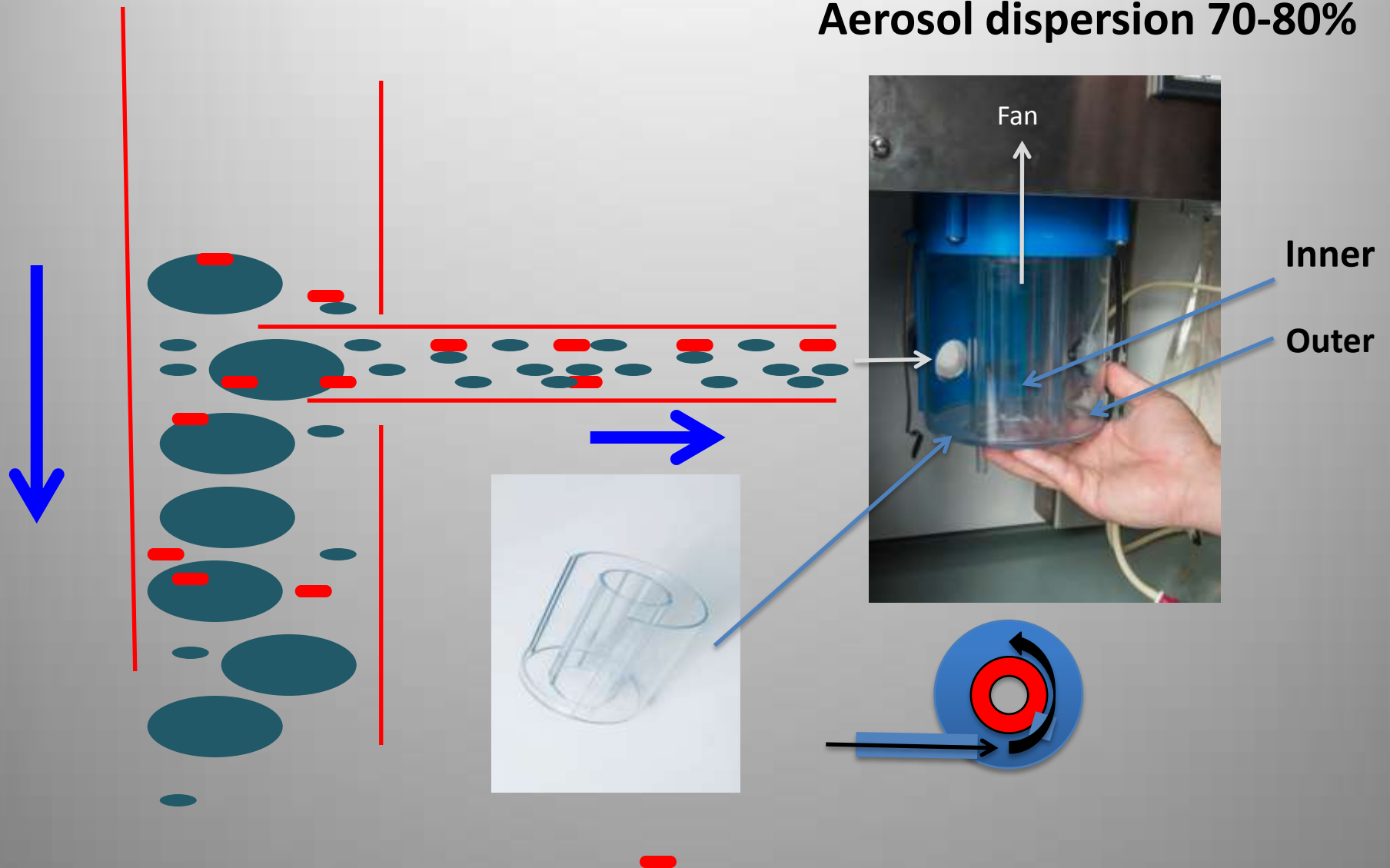
Negative
Contamination?



1:100,000 Probability of detection

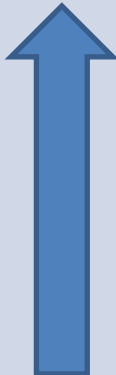

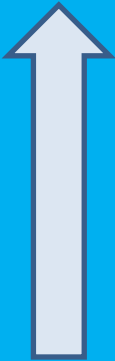
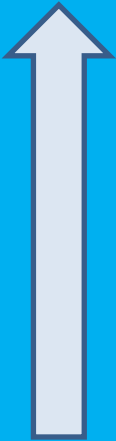

(based on statistical calculation by weight)

Separation / Collection / Hydrosolization

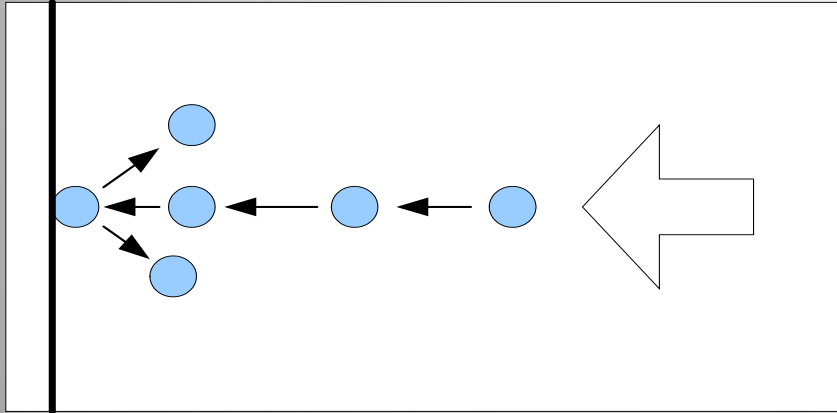


Cold Sterilants and Disinfectants

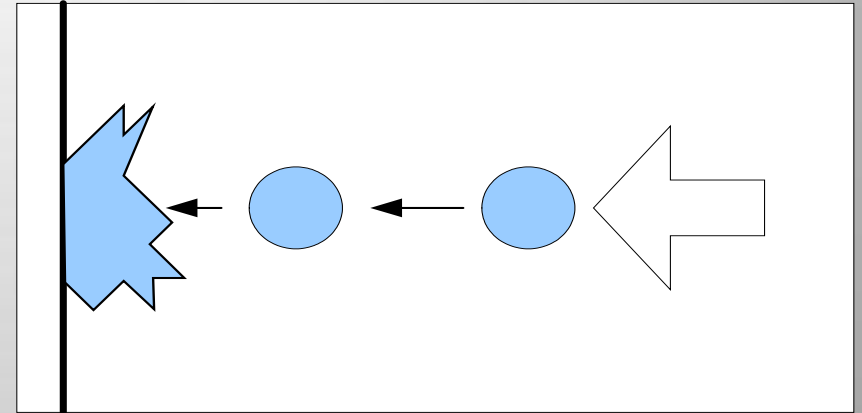
Classification and Chemicals

Microorganism	Difficulty to Kill	Low Level Disinfection	Intermediate Level Disinfection	High Level Disinfection	Sterilization
Bacterial Spores	 <p>More</p> <p>Less</p>				
Mycobacteria					
Non-Enveloped Viruses					
Fungi					
Gram Negative Bacteria					
Gram Positive Bacteria					
Enveloped Viruses					
Types of Chemicals		Alcohol Phenolics Quaternary ammonium	Hydrogen Peroxide Phenolics Multi-Quat / High Alcohol Sodium Hypochlorite	Formaldehyde Glutaraldehyde Hydrogen Peroxide+ Peracetic Acid Sodium Hypochlorite	Hydrogen Peroxide + PAA EtO Hydrogen Peroxide Gas/Vapor Peracetic Acid

The Phenomenon of Dry Fog



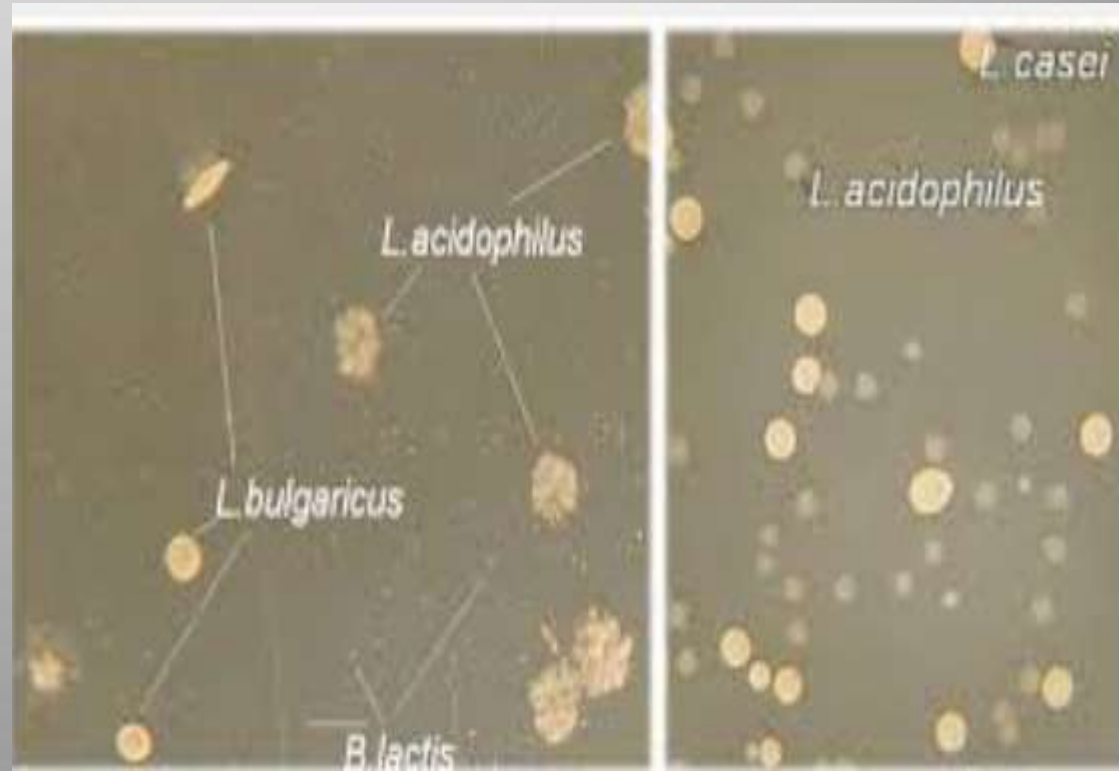
Small droplets bounce and do not burst upon collision. 7.5μ droplet evaporates to do a vapor phase disinfection



Large droplets burst and make things wet.

What Are Probiotics?

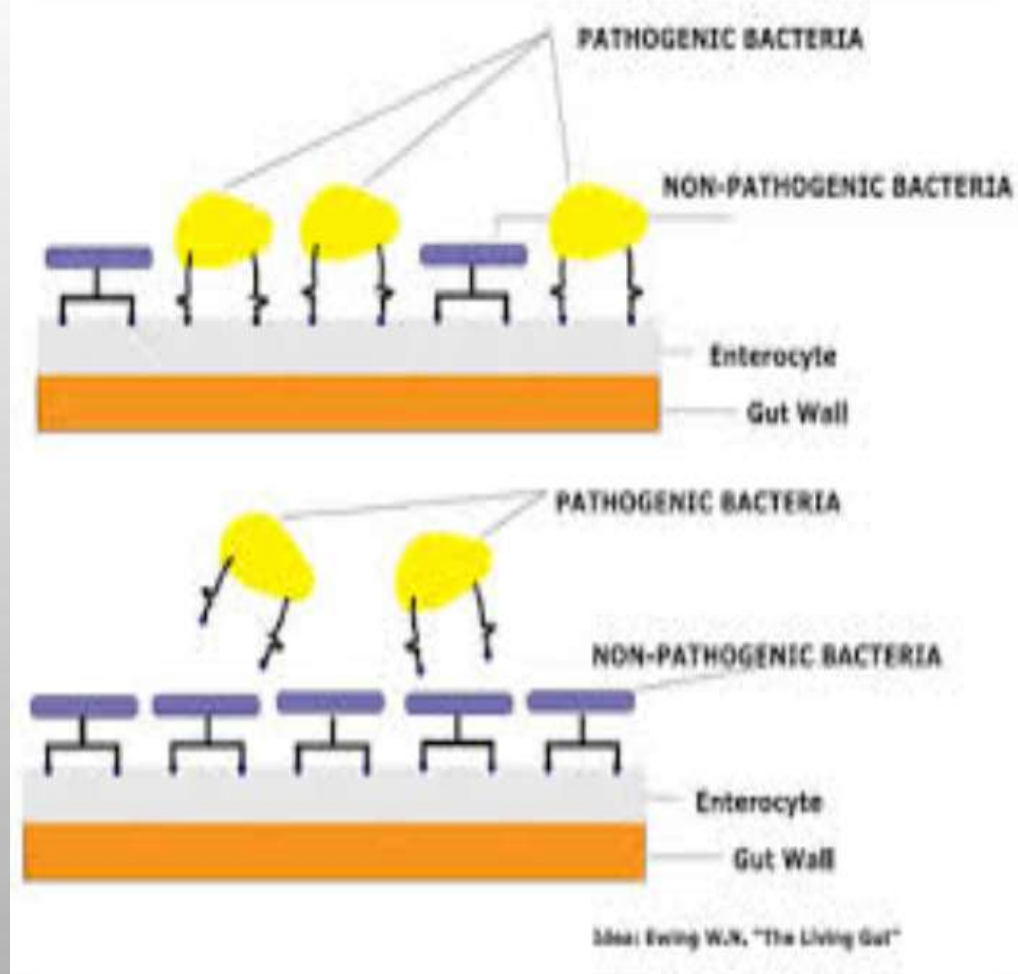
- Commonly Used Strains
 - Lactobacillus
 - Bifidobacterium
 - Enterococcus



What Do Probiotics Do?

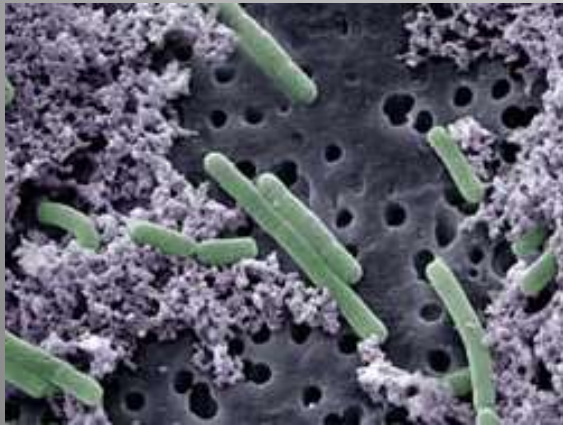


- Aid in digestive health
 - Competitive inhibition
 - Competitive exclusion
 - Receptor binding
 - Antagonistic behavior
- Secondary benefits
 - Antimicrobial characteristics in product



- Environmental Application

Journey Past, Present, Future



QUESTIONS ?