### LAY / BREEDER BARN CONTROL

Salmonella

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> the biosecurity specialist!

### SALMONELLA

- 800,000-4,000,000 Cases a year in the USA.
- Ecoli and Salmonella Cost of 3.1 billion in 2010 (CIDRAP news)
- Over 500 deaths



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#### SALMONELLA **VETOQUINOL CONTROL**

- **Contamination sources** BCUL
  - Water
    - Multiply and thrive
  - Surfaces

· Carsu m

moisture for long periods 

and to excrete upwards of 10<sup>6</sup>cfu/g

Flies

Vio

• Quick multipliers doubling input! 2 x 10<sup>6</sup> per fly







### **Biosecurity**



### **Disease Control**

#### Vaccination

### **RWA/ABF**

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#### Only Chemistry can break the chain of transmission





### BIOSECURITY

- Physical
  - Caz, Raz ,C&D, rodent, Insect....
- Personal
  - PPE, Zoonosis...
- Material
- Transport
- Auditing
- Programs

## **Living Science**

**Biosecurity Program** 

### Biosecurity Should be in the operating budget

**Biosecurity is not an additional expense!!!** 

Terminal Disinfection

- Without birds in the room or barn

Continuous Protection

- With birds in the room, barn, or adjacent pens

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### VETOQUINOL PRODUCTS / PROGRAMS



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# - IN ABSENCE OF ANIMALS

- 1. Initial Insect Control
  - Space spray
- 2. Organic Matter Removal
- 3. Water Line Cleaning and Disinfection
- 4. Detergent Application
  - Spraying / foaming
- 5. Washing and Rinsing
  - High pressure water



# - IN ABSENCE OF ANIMALS...

- 6. Second optional detergent application / Rinse
  - Descaler
- 7. Disinfection
  - Spraying / foaming
- 8. Misting / fumigating
- 9. Second Insect Control
  - Wall spray
- 10. Rodent Control



### 1. INITIAL INSECT CONTROL – SPACE SPRAY

 Insects also are great vectors for many diseases – Leaves spots every 4-5 minutes
 It is ideal to treat while the barn is empty, as soon as birds have been taken out !



### **Terminal Disinfection**

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### 1. INITIAL INSECT CONTROL

### **Darkling Beetles:** a special application!





### **Terminal Disinfection**

### **3. WATER LINE CLEANING AND DISINFECTION...**

≻ Why?

> Birds drink approximately 2X what they eat
> Improperly cleaned waterlines may harbor
> Biofilms containing a variety of microbes
> Left over medications from previous batches
> Excess minerals
> Probiotics, Prebiotics, Vitamins ..



### **Formation of Biofilms**



### **3. WATER LINE CLEANING AND DISINFECTION...**

Maintance vs. Cleaning

Maintance – Restricting / Maintaining (CP)

Chlorine
Hypochlorous acid
Acidified sodium chlorites
Chlorine dioxide
Hydrogen peroxide

Hydrogen peroxide and

peracetic acid

- Iodine or iodophors
- ≻UV light
- Acidification



### 3. WATER LINE CLEANING AND DISINFECTION...

Maintance vs. Cleaning.

Cleaning – Without birds present or not allowed to consume water (TD)

Biofilms, Microbes, Medications...

> Choose an appropriate **detergent** depending on

issues: organic matter or mineral deposits

\*\* Ensure treated waterline is not supplying water to birds in another room / building!



### 3. WATER LINE CLEANING AND DISINFECTION

#### > Testing

- Splitting lines –look or feel
- Water samples levels of loads
- Swab samples growing media



> Active chemical testing – specifying agents





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### **Organic and Mineral Deposits**



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#### Water Lines









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### 3. WATER LINE CLEANING AND DISINFECTION...

Prepare stock solution to ensure proper dilution rate and volume, depending on delivery system

- Inject solution in waterline
- Ensure product is present everywhere

**Biosolve Plus Biosolve AFC** 



### **3. WATER LINE CLEANING AND DISINFECTION...**

Let stand (soaking time depends on condition of the waterline)
 Soak while surface washing!
 Rinse / flush the line
 Preferably repeat steps using an appropriate disinfectant







### 4. DETERGENT APPLICATION - SPRAYING / FOAMING

- Thorough washing with a detergent is essential to:
  - Reduce time and water required for the cleaning process
  - ✓Help remove biofilms and minerals
  - Help maximize the efficacy of disinfectants

### **Detergents / Cleaners**

Table 6: The Benefits Fr	om Better Biosecurity Techniques				
		Calculated Value of			
		Finishers (Against			
		Controls or Former			
Reference	Trial Type, Basic Details	Practice)			
Cargill & Benhazi (1998)	Cleaning A.I.A.O. buildings before				
	disinfection with a detergent.	+ £3.12/pig			
Overton (1995)	Salmonella outbreak controlled.	+ £3.86/pig			
Jajubowski et al. (1998)	Using a powedered peroxide				
	disinfectant (Virkon S) instead of NaOH.	+ £8.80/pig			
Sala et al. (1998)	Full Antec programme v. iodine.	+ £2.10/pig			
Sala et al. (1988)	Full Antec programme batch				
	disinfection v. terminal disinfection only.	+ £5.66/pig			
CASHP Denmark (n.d.)	Partial v. total biosecurity programme.	+ £7.77/pig			
Antec Trial (G&M, 1999)	Change to A.I.A.O. and full Antec protocol,				
	result after 3rd batch.	+ £7.15/pig			
Gadd (1994-1998)	Average of 10 clients uprated to full				
	biosecurity protocols.	+ £5.63/pig			
	Average : all results	£ 5.51/pig			
Assumptions: • Weights ranged from 6-90 to 30-100 kg.					
<ul> <li>Food in last 14-21 days, range 2.2 to 2.25 kg/day.</li> </ul>					
Finisher	%.				

 £5.51/pig = C\$12.12 on a selling price per 70 kg dwt hog at 96p/kg dwt of £67.20 hog (C\$148) The Investment in hygiene measures give a higher return by breaking pathogen cycles. Time, labour and product combined still shows up to 1:13 payback



### **Picking the right Detergent**



Rotation Step 6





BiosightecPlus Degreaser Biosolme Afr C Descaler

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### Cleaner

### Deposit

Surface

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### **Different Types of Equipment**



O Siele	0 .	1litre =	1000ml		
	Labels	%	g or ml/L	oz/gallon	Million '
	1:100	1	10	1.3	hyperox 00-RIDEM DISVAP NEC
LIZZU	1:128	0.8	8	1	40L- 301-
EEEEU EEEEU	1:256	0.4	4	0.5	20 L
render	1:40	2.5	25	3.2	
http://biosecurity.vetoqui nol.ca/eng					

1.410

Rule 2 Apply with low pressure

### Cleaner

### Deposit

Surface

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### **FOAMING VS SPRAYING**

Foaming



Spraying





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### Cleaner

### Deposit

Surface

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### **MANUAL SCRUBBING**







Rule 4 Rinse off before solution dries

### Cleaner

### Deposit

Surface

be biosecurity

### 6. DETERGENT / ROTATION

- Extra wash with a descaler every few years
- Apply like the degreaser
- Let sit at least 10 minutes
- Scrub difficult areas
- Rinse off







### 7. DISINFECTION

- Cleaning With Detergents (Sanitizers) eliminates > 90% of microbes, what's left is still more than enough to be harmful to livestock
- Live animals and porous surfaces ⇒ high contamination / more viruses
- Using a disinfectant proven efficient against bacteria, fungi and especially viruses is therefore essential!



### **7. DISINFECTION** - SPRAYING / FOAMING...

Overall result of disinfection depends on: ✓Type & cleanliness of surfaces ✓ Type & resistance of microbes ✓Water and surface temperature Choice & efficacy of disinfectants

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### How a Disinfectant works









### **RESIDUAL CHEMISTRIES**

Residual = slower biodegradation

#### **Rehydration = Reactivation**

Lower than normal concentration therefore decreased activities due to less chemical reactive.

Gassing off from the secondary action of the residual chemistry

Irritation to trachea – Morbidity, Opportunistic microbes Irritation to feet – Phenols

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#### **OXIDATIVE CHEMISTRIES**

### **RESIDUAL CHEMISTRIES**



### 7. DISINFECTION

★ Before applying Disinfectants make sure surfaces that are dry as possible:
 ✓ Prevent over-dilution
 ✓ Prevent chemical incompatibilities
 ✓ Improve penetration of the disinfectant



### **7. DISINFECTION** - SPRAYING / FOAMING...

> Apply – right rate according to situation > Let stand at least 10 minutes Minimal contact time for disinfectants in general Dry as quickly as possible afterward Too long a contact time is not necessarily preferable nor desirable! Some disinfectants need to be rinsed off!

**Residual Chemistries** 

### 8. SECOND OPTIONAL DISINFECTION – MISTING / FOGGING

- Misting / fogging is recommended to disinfect inaccessible areas, or simply to complete disinfection, after mobile equipment and litter are returned
- Sometimes called « double disinfection »
   Misting / fogging do not replace disinfection by spraying!!!



#### 8. SECOND OPTIONAL DISINFECTION – MISTING / FOGGING

- Gas- OPP can
  - Very Fast, geleve
  - Limited production
- Thermal Fogging
  - Fast, Gets everywhere
  - Less limited Products, Expensive Machine
- Cold Misting
  - All products, Cheaper to apply
  - Needs assistance, longer to apply





assium/Formalin

r out, Dangerous

e quickly

### 9. SECOND INSECT CONTROL – WALL SPRAY

Choose an approved wall spray residual insecticide, aiming at eliminating future populations





### **Terminal Disinfection**

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# **OVALL SPRAY**

### **Darkling Beetles:** a special application!



### **Terminal Disinfection**

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### **10. RODENT PROGRAM**



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- Quality control Programs
- Monitoring
- Assessing
- Readjusting

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# - IN PRESENCE OF LIVESTOCK

- 1. Visitor control
  - Access, vehicles, clothing, foot baths
  - 2. Continuous insect control - Bait, traps, livestock spray, etc.
  - 3. Continuous rodent control
  - 4. Additional routine measures
  - 5. Specific measures







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Biosolve Plus Biosolve AFC



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### THANKS! QUESTIONS?

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